Overview

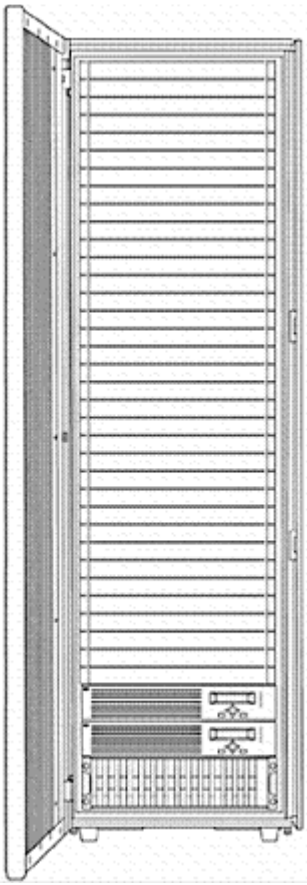
The HP 4100/6100/8100 StorageWorks Enterprise Virtual Array family is an enterprise class storage array system designed to aggregate and automate your array management tasks to manage more storage capacity with fewer resources. EVA is designed specifically for customers in the business critical, enterprise marketplace and is a highly available and highly reliable "virtual" array storage solution. Not only does this solution save time, space and costs compared to traditionally architected storage, it is supported by a powerfully simple suite of management software making it easy for users to provision storage and the achieve highest level of productivity.

The Enterprise Virtual Array (EVA) 4100/6100/8100 family is designed for the data center where there is a critical need for improved storage utilization and scalability. The EVA meets application specific demands for transaction I/O performance for mid-range and enterprise customers. It provides easy capacity expansion, instantaneous replication, and simplified storage administration. The Enterprise Virtual Array combined with HP StorageWorks Command View EVA software provides a comprehensive solution designed to simplify management and maximize performance.

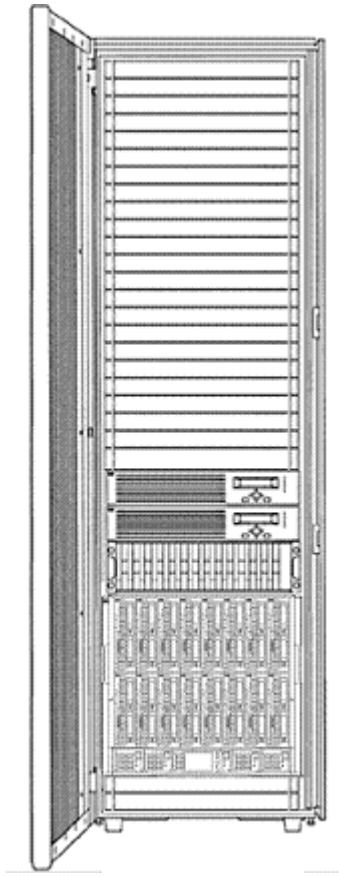
With HP Storage Essentials Standard Edition SRM Software, you have an affordable and complete Storage Resource Management solution to efficiently manage EVA and SAN infrastructure via a unified and integrated server and storage, secure web-based tool set. Standard Edition SRM software is designed for small to medium HP Storage-based SANs and it discovers HP EVA and SAN infrastructure devices with a big picture topology view of the entire EVA ecosystem including HP EVA, HP MSA, and HP ProLiant Storage Servers (NAS), HBAs, servers and fabric switches, and it provides an holistic view of storage from the application level including Oracle, MS SQL, Exchange, InterSystems Cache' and Sybase for quicker problem resolution. The software solution reduces SAN complexity, helps optimizes SAN capacity, automates manual intensive tasks, increases IT staff efficiency and simplifies end-to-end troubleshooting monitoring and reporting. For heterogeneous and multivendor SANs, you can use HP Storage Essentials Enterprise Edition Software. The new Storage Essentials SRM Performance Pack Software provides advanced end to end performance monitoring from the application to the disk drive for multiple HP EVA SANs and arrays while increasing overall performance and reducing bottlenecks and failures.

HP offers a full spectrum of complimentary HP StorageWorks EVA hardware, software product, solutions and HP services. This ranges from an EVA4100 Starter Kit for affordable, fast and easy small SAN deployment, the MPX200 Multifunction Router provides 1 GbE and 10 GbE iSCSI, EVA iSCSI Connectivity Option, Business Copy EVA, Continuous Access EVA, Dynamic Capacity Management and solution integration. In addition, the EVA warranty offering -- Foundation Service Solution, provides the base level of service included with most EVAs. HP Services provide additional offerings up to Critical Service, the support for mission critical environments.

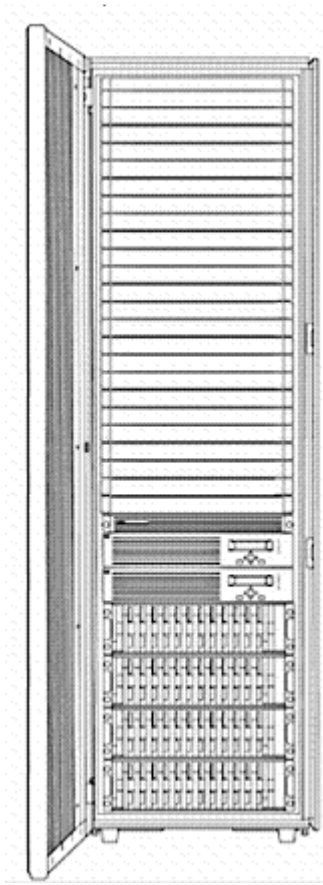
Overview



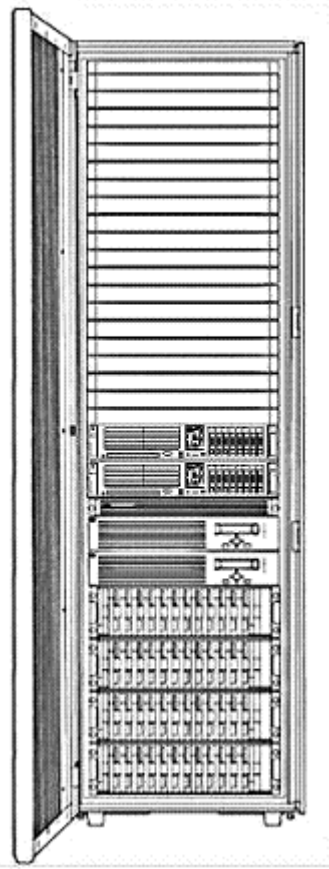
EVA4100 2C1D and EVA4100 Starter Kits



HP EVA4100 Starter Kit for HP BladeSystems
(BladeSystems sold separately)

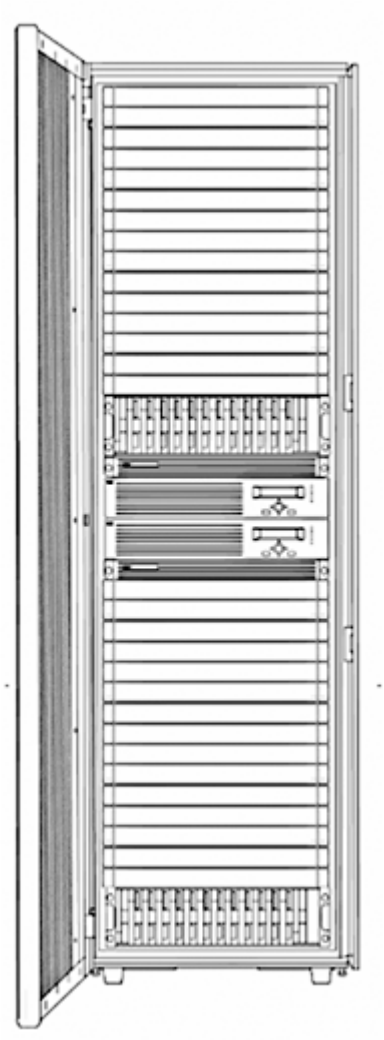


EVA6100 2C4D

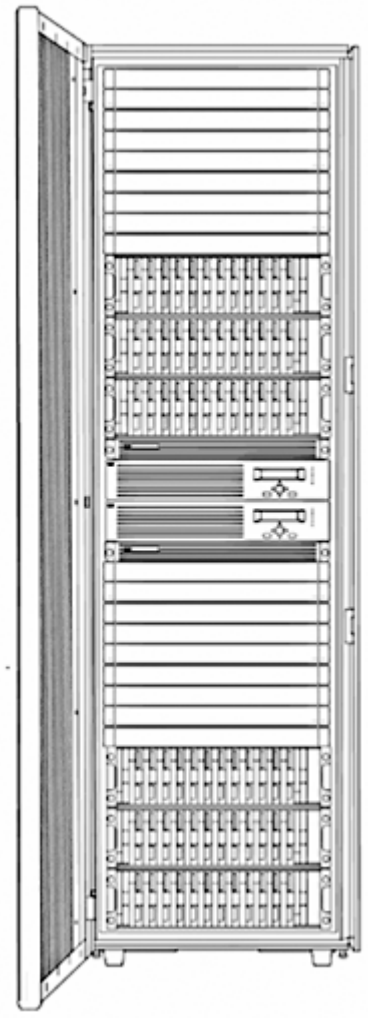


EVA6100 File Services (EVA4100 & EVA8100 File Services also available)

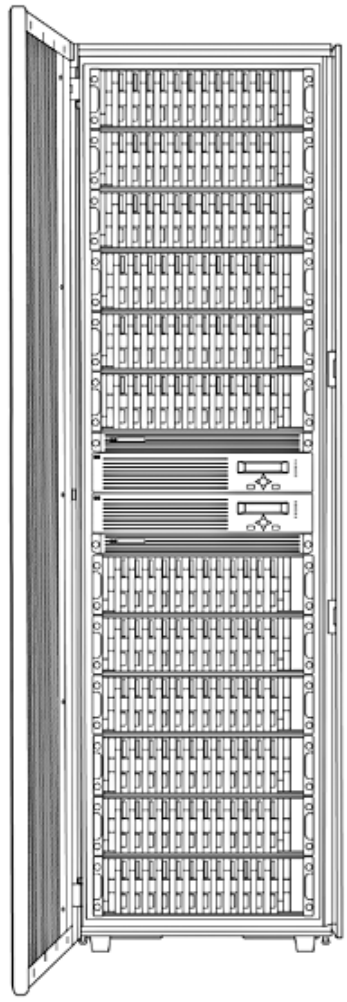
Overview



EVA8100 2C2D*



EVA8100 2C6D*



EVA8100 2C12D

*These drawings are informational only and represent a storage centric configuration. The actual configuration may differ depending on the components being racked with the EVA (for example when using the EVA8100 multiple product part number and/or having servers racked with an EVA the configuration will be racked from the bottom of the rack and up). If a customer has a specific racking requirement they should use the Factory Express option to define the configuration.

What's New

The new EVA 4100/6100/8100 arrays support:

- Support for new Low-Power Fibre Channel hard disk drives - 300GB 10K, 450GB 10K and 600GB 10K
- Support for the HP StorageWorks MPX200 Multifunction Router
  - provides 1 GbE and 10 GbE iSCSI connectivity to the EVA
  - enables modular multi-protocol SAN designs with increased scalability, stability, and ROI on storage infrastructure.

Product Highlights

	EVA4100 Starter Kits and EVA4100 SAN Starter Kit	EVA4100	EVA6100	EVA8100
Application Environment	Complete, ready to go small SAN Kit	Entry	Mid/High	Business Critical
Local Data Replication -- HP StorageWorks Business Copy EVA	yes	yes	yes	yes
Remote Data Replication -- HP StorageWorks Continuous Access EVA	yes	yes	yes	yes
Easy array management and configuration -- HP StorageWorks Command View EVA	HP CV EVA media kit included and 4-1 TB LTUs (up to 4-TBs licensing included) ; up to 16 EVAs	up to 16 EVAs	up to 16 EVAs	up to 16 EVAs
Application block and file storage	yes	yes	yes	yes
RAID supported	Vraid0, Vraid1, Vraid 0+1, Vraid5, Vraid 0+5 & Cross Vraid Snaps	Vraid0, Vraid1, Vraid 0+1, Vraid5, Vraid 0+5 & Cross Vraid Snaps	Vraid0, Vraid1, Vraid 0+1, Vraid5, Vraid 0+5 & Cross Vraid Snaps	Vraid0, Vraid1, Vraid 0+1, Vraid5, Vraid 0+5 & Cross Vraid Snaps
Number of controllers	2	2	2	2
Cache (per controller pair)	4GB	4GB	4GB	8GB
Host Connectivity	Fibre Channel, iSCSI and Direct Connect	Fibre Channel, iSCSI and Direct Connect	Fibre Channel, iSCSI and Direct Connect	Fibre Channel, iSCSI and Direct Connect
Number of Host Supported (Single Path/Dual Path)	512/256	512/256	512/256	512/256
Host Ports, (per controller pair)	4	4	4	8
Host Port Speed	2 or 4 Gb	2 or 4 Gb	2 or 4 Gb	2 or 4 Gb
Device Ports (per controller pair)	4	4	4	8
Device Path Aggregate Bandwidth	8 Gb	8 Gb	8 Gb	16 Gb
Back-end switch (per array)	0	0	2	4
Switched device shelves	1 device shelf included, 1 to 4	1 to 4	4 to 8	2 to 18
Drives per enclosure	14 (8-146 GB 15K rpm or 8-300 GB 10K rpm FC HDDs included)	14	14	14
Drive types (mixed in enclosure)	High Performance Fibre Channel and Fibre Attached Technology Adapted (FATA)	High Performance Fibre Channel and Fibre Attached Technology Adapted (FATA)	High Performance Fibre Channel and Fibre Attached Technology Adapted (FATA)	High Performance Fibre Channel and Fibre Attached Technology Adapted (FATA)

Product Highlights

Supported disks, min-max	8 to 56	8 to 56	16 to 112	8 to 168 (one cabinet) up to 240 with utility cabinet
Capacity	1.2 to 56TB	1.2 to 56TB	1.2 to 112TB	1.2 to 240TB
I/O Requests per Second (IOPs)	154,000	154,000	154,000	225,000
Maximum throughput (MB/s)**	1380	1380	1380	2450

EVA Capabilities

- Excellent reliability and availability. HP's data shows that most customers are achieving 99.999% availability with the EVA 4x00/6x00/8x00
- EVA4100 Starter Kits; SAN made easy. An affordable, ready to go, easy to manage and easy to deploy small SAN solution.
- Support for integrated application (block) and file storage solution, EVA File Services
- Support for dual-ported 2/4 Gb/s FC disk drives and dual-ported Fibre Attached Technology Adapted (FATA) drives
- Support for Direct Attach connection to Windows storage servers without the need for SAN switches. SAN support for integrated EVA iSCSI connectivity options with Windows and Linux, Apple Mac OS X, Microsoft Windows, Sun Solaris, VMware. Management of up to 1024 virtual disks (256 per HBA) ranging in size from 1GB to 2TB per Virtual disk, in 1GB increments.
- Dynamic Capacity Management support to expand (in 1GB increments) and shrink LUNs. NOTE: Requires Host Operating System Support.
- Virtual disk data load leveling (non-disruptive background activity)
- Distributed sparing of disk capacity.
- Fully switched controller to disk path
- Support for HP StorageWorks Continuous Access EVA remote replication (synchronous and asynchronous).
- Support for remote replications between current and earlier EVA generations
- Support for HP StorageWorks Business Copy EVA (Snapshot, and Vsnap (virtually capacity free shapshots), Snapclone, MirrorClone and Cross Vraid snapshots and Snapclone).
- Dual redundant controller operation for increased fault tolerance.
- Multiple Bus Failover Support using industry popular multiple path software. NOTE: Requires native OS multi-pathing support
- Battery-Back-Up for controller cache memory
- Asynchronous Disk Swap (hot swap)
- Clustered Server Support
- Mirrored Write-Back Cache Support
- Read-Ahead and Adaptive Read Caching Support
- Virtual RAID Arrays (Vraid0, Vraid1, Vraid 0+1, Vraid5, Vraid 0+5 & Cross Vraid Snaps)
- Support for local replication between Vraid types using Vsnap or Snapclone within a disk group or using Snapclone across disk groups (and Cross Vraid Snapshot and Snapclone)
- Online XCS software upgrade capability
- Online drive firmware upgrade capability
- Supports connection of up to 256 hosts
- Multi-Vendor Platform Support
- Controller Password Protection for Configuration Control
- Selective Storage Presentation and SAN-based Data Zoning (through switches).
- HP StorageWorks Command View EVA GUI Interface for management and monitoring (manages up to 16 EVAs).
- Monitor and control health, HP EVA end-to-end SAN performance and monitoring, storage utilization and reporting for all key HP EVA and SAN infrastructure including servers, storage, HP

MSA, HP EML E-series tape, HP ProLiant Storage Servers (NAS), HBAs, switches, applications and monitor the entire backup from a single interface with HP Storage Essentials SRM Standard Edition Software

Enterprise Virtual Array Product Packaging

The EVA4100 Starter Kit includes 1-2C1D 4U FC dual HSV200-B controller assembly and 14-bay Model M5314C FC Drive Enclosure, 8 disk drives (in either 146GB 15K or 300GB 10K capacities), dual-port 2/4Gb/s FC-AL, 1-inch (2.54 cm) drives, 1 CV EVA media kit, 4-1 TB LTUs T3725A and firmware XCS 6.110. The EVA4100 Starter Kit is designed to address smaller SAN configurations that need affordable, fast and easy complete small-SAN deployment. The EVA4100 Starter Kit allows you to quickly implement a small-SAN with room to easily grow capacity using standard EVA4100 components (drives, shelves, etc.) as needed up to 28TBs. In EMEA, this kit includes Installation and Startup Service. This service is available separately in all other regions.

The EVA4100 SAN Starter Kit includes all of the above from the EVA4100 Starter Kit. In addition, it includes 4 HP StorageWorks HP StorageWorks FC2142 4Gb PCI-e HBA's, 1 HP StorageWorks 4/8 Base SAN Switch, 8 4Gb SFPs, 4 StorageWorks LC/LC 15m Cables, 4 StorageWorks LC/LC 2m Cables and Emulex's EZpilot software. This starter kit provides an all-inclusive simplified and automated SAN solution optimized for Microsoft Windows. EZPilot, used in conjunction with Command View EVA, streamlines and automates the deployment of your SAN. The EVA4100 SAN Starter Kit allows you to easily and quickly implement a SAN based with EVA and its best in class usability. With the basic SAN components and management software in place, you can grow your SAN environment easily and on your terms. NOTE: The EVA4100 SAN Starter is not available in EMEA.

The EVA4100 Starter Kit for HP BladeSystems includes 1-2C1D 4U FC dual HSV200-B controller assembly and 14-bay Model M5314C FC Drive Enclosure, 1 CV EVA media kit T, 4-1 TB LTUs T3725A and firmware XCS 6.110. The EVA4100 Starter Kit for HP Bladesytstem is designed for HP BladeSystems environments that need affordable, fast and easy complete small-SAN deployment. This Starter Kit allows you to quickly implement a small-SAN with room to easily grow capacity using standard EVA4100 components (drives, shelves, etc.) as needed up to 28TBs. This Starter Kit must be purchased in conjunction with an HP BladeSystems. In EMEA, this kit includes Installation and Startup Service. This service is available separately in all other regions.
NOTE: The EVA4100 Starter Kit for HP BladeSystems is not available in EMEA.

The EVA4100 packaging consists of a 4U FC dual HSV200-B controller assembly and 14-bay Model M5314C FC Drive Enclosures. The EVA4100 is designed to address moderate capacity needs ranging (from 1 - 56TB) as well as high performance options in commercial environments.

The EVA6100 packaging consists of a 4U FC dual HSV200-B controller assembly, 2 FC Loop Switches and four 14-bay Model M5314C FC Drive Enclosures. The EVA6100 is designed to address moderate capacity needs ranging (from 1 - 112TB) as well as high performance options in commercial environments.

The EVA4100 Starter Kits, EVA4100, EVA6100 EVA8100 configurations allow a wide range of configuration options. The bundled models offer flexible factory rack-mounting options in either a standard 42U cabinet (based on the HP 10000 G2 Series Rack- or a choice of 42U extended 36U and 22U heights). The new factory racking options allow the EVA4100 Starter Kits, EVA4100, EVA6100 and EVA8100 to be factory integrated into cabinets with a wide variety of other HP offerings such as servers and tape back-up offerings. The EVA8100 bundled models consists of a 4U FC dual HSV210-B controller assembly, 14-bay HP StorageWorks Model M5314C FC Drive Enclosures, four FC Loop Switches (optional for 2C2D model, standard for 2C6D and 2C12D models). The EVA8100 factory racking options allow the EVA8100 to be factory integrated into cabinets with a wide variety of other HP

offerings such as servers and tape back-up offerings.

The EVA8100 is designed to address moderate to large capacity needs ranging (from 2 - 18 drive enclosures, 1 - 240TB) as well as high performance options in commercial environments.
The EVA4100/6100 and EVA8100 are also available as a Controller Pair Assembly, individual M5314C Drive Enclosures, and Optional FC Dual Loop Switches to accommodate adding EVA4100/6100 subsystems to existing EVA configurations, other supported HP field racking choices and to support qualifying customer-supplied racks. The 5642 (42U) Rack Cabinet System is supported for field installation.

NOTE: Addition of FC Loop Switches to an EVA4100 (1 to 4 M5314C FC Drive Enclosures) creates an EVA6100 and requires purchase or upgrade of Command View, Business Copy and Continuous Access EVA licenses.

Multi-Vendor Platform

The EVA4100 Starter Kits, EVA4100/EVA6100/EVA8100 provide support for industry-leading Operating System platforms including: HP-UX, HP OpenVMS, HP Tru64 UNIX, Windows 2000 Server & Advanced Server, Windows 2003 Professional, Windows 2003 Standard/Enterprise (32/64-bit) and Extended (32/64-bit), /DataCenter (64-bit), Sun Solaris, Linux, IBM AIX, Novell NetWare ,VMware and Apple Mac OS X.
NOTE: See Operating System, Cluster and High Availability Compatibility matrix for Operating System version detail.

Designed for No-Single-Point-of-Failure

The EVA family's redundant architecture and value added software is designed to eliminate single-points-of-failure from server to storage in clustered or single server configurations with multi-pathing.

HP StorageWorks 12000 Virtual Library System EVA Gateway

Expanding the power of the HP StorageWorks Enterprise Virtual Array (EVA), the HP StorageWorks 12000 Virtual Library System EVA Gateway accelerates backup performance in complex SAN environments while improving overall reliability. Integrating seamlessly into existing backup applications and processes by emulating popular tape libraries and tape drives, the HP VLS 12000 EVA Gateway matches the existing data protection environment, removing the need to change backup software or monitoring policies. Additionally, because the VLS EVA Gateway uses HP EVAs as the storage pool, ease of use is maintained throughout the system. By emulating multiple tape drives simultaneously, more backup jobs can be done in parallel resulting in reduced backup times and, because the data resides on disk, single file restores are exceptionally fast.

The HP Virtual Library System EVA Gateway simplifies your SAN environment by providing more virtual devices and leveraging existing switches and HP EVA infrastructure. The result is the ability to vastly increase scale yet reduce the complexity of shared storage while maintaining the manageability of the system. As your environment changes, the HP Virtual Library System EVA Gateway adapts to it - host masking and mapping ensure that only the appropriate hosts have access to the HP Virtual Library System.

http://h18006.www1.hp.com/storage/disk_storage/disk_to_disk/vls/index.html

Product Highlights

Remote Replication Solutions
(Software options)

HP StorageWorks Continuous Access provides disaster tolerant replication across a Fibre Channel SAN. Continuous Access EVA performs real-time replication between HP StorageWorks Enterprise Virtual Arrays of the current and earlier generations. Continuous Access EVA provides the highest level of FC SAN data protection to customers in order to meet disaster tolerant business continuity implementation goals. Through the use of MAN/WAN Fibre Channel SAN extensions, Continuous Access EVA provides 24x7 protections against disaster like scenarios, in campus, metro or continental networks. Thus, enabling business protection against unforeseen events.

HP StorageWorks Disaster Tolerant Solution for mySAP Business Suite on EVA offers a business continuance solution for SAP environments, where data integrity and value added functionality are high priorities. Information on implementing remote mirroring of an SAP database as part of an overall data protection strategy with SAP applications can be found at:
http://h71028.www7.hp.com/erc/downloads/4aa1-5683Enw.pdf

The HP StorageWorks IP Distance Gateway provides SAN over WAN connectivity for protecting and replicating data between EVA systems. By connecting islands of SANs over WANs, the IP Distance Gateway enables CA replication (Asynchronous and Synchronous), SAN device sharing, data migration and other long distance data services. At the core of providing long distance data services is the ability to copy, move and replicate data locally and over long distances. However, SANs have limited distance capabilities (10km) and IT managers need to share, protect and move data over greater distances than 10km, routers and switches that link SANs over IP WANs is the weapon of choice for most IT managers. The IP Distance Gateway uses the FCIP (Fibre Channel Internet Protocol) standard to extend SAN connectivity over the WAN.

- Low Cost SAN over WAN Connectivity
- High Performance with data compression and load balancing
- Support for FCIP for SAN extension
- Bridges SANs for all FC Fabrics
- Supports two Ethernet and two Fibre Channel ports
- Concurrent FC and IP traffic in High Availability mode
- Integrated management with HP StorageWorks mpx Manager
- Supports High Availability Options
- Fabric and Direct Attach support

http://h18006.www1.hp.com/storage/disk_storage/index.html

Product Highlights

Disaster Tolerant Solutions (Software options)

HP Metrocluster with Continuous Access EVA and Continentalclusters are integrated solutions that offer minimal downtime by rapid site recovery with automatic failover of application services (via Serviceguard) and automatic data consistency checking and read/write enabling of remotely mirrored storage in the event of a fault, failure, or disaster
http://h71028.www7.hp.com/enterprise/cache/4171-0-0-0-121.html

HP StorageWorks Cluster Extension EVA software is a full-site disaster tolerance solution designed for mid-range storage array implementation. A disaster tolerant solution for Windows 2003 and now Linux environments, Cluster Extension EVA integrates, automates, and synchronizes server cluster failover operations with the remote replication management capabilities of HP Continuous Access EVA for a disaster tolerant solution for EVA arrays whether used as primary storage or in a tiered-storage configuration.
http://www.hp.com/go/clxeva

HP StorageWorks Disaster Tolerant Solution for mySAP Business Suite on EVA offers a business continuance solution for SAP environments, where data integrity and value added functionality are high priorities. Best practices for implementing remote mirroring of an SAP database as part of an overall data protection strategy with SAP applications can be found at:
http://h71028.www7.hp.com/ERC/downloads/4AA1-5683ENW.pdf

Local Replication Solutions (Software options)

The HP StorageWorks Business Copy is a local replication application for the EVA family. It incorporates Virtually Capacity-free Snapshot (Vsnaps), standard snapshots and Snapclone capabilities with an improved user interface to assist the storage administrator. This product is indispensable for critical data center operations such as non-disruptive backups, frequent snapshots of high value databases, and data mining. The bottom line benefits include improved disk capacity utilization and increased business continuity, data availability, and productivity savings.

HP OpenView Storage Volume Growth provides the ability to easily expand basic disk volumes on Windows 2000 or Windows Storage Server 2003 systems without disrupting the application environment or impact the user's data. This host based product supplements the volume expansion capabilities of the Enterprise Virtual Array providing a complete end-to-end solution.

HP StorageWorks EVA Dynamic Capacity Management Software

HP StorageWorks EVA Dynamic Capacity Management Software is a comprehensive software solution that automates storage provisioning and improves capacity utilization on the HP StorageWorks Enterprise Virtual Array (EVA) family. Designed for the enterprise market, EVA Dynamic Capacity Management Software uses advanced automation to automatically "right-size" the file system and storage volumes to ensure the highest levels of capacity utilization are achieved while reducing ongoing storage administration needs.

For more information, visit:
http://h18006.www1.hp.com/products/storage/software/eva_dcm/index.html.

EVA with HP Storage Essentials Storage Resource Management Software Family

HP Storage Essentials SRM Enterprise Suite and HP Storage Essentials SRM Standard Edition Software integrates with HP Systems Insight Manager to provide advanced server and storage management capabilities. HP Storage Essentials Suite Software features a base management console and an expanding portfolio of value-add plug-ins to assist in managing EVA across the enterprise.

HP Storage Essentials Suite delivers integrated heterogeneous and multivendor functionality for network (Arrays, DAS, SAN, NAS, HBAs, switches) management, storage resource management, reporting, capacity metering, provisioning and application infrastructure monitoring.

http://h18006.www1.hp.com/products/storage/software/e-suite/index.html

EVA with HP Storage Essentials SRM Performance Pack Software

New, HP Storage Essentials SRM Performance Pack Software combined with Storage Essentials SRM Enterprise Edition Software monitors end to end performance along the complete path of business applications through underlying storage area networks (SAN) components, including host server, host bus adapter (HBA), fabric switch and Enterprise Virtual Array. A unified and simplified interface, helps HP EVA administrators increase efficiency, troubleshoot performance bottlenecks faster, and quickly visualize the big performance picture of their EVA storage, hosts and SAN infrastructure with real-time monitoring, historical trend analysis and trend extrapolation.
http://h18006.www1.hp.com/products/storage/software/e-suite/performance_pack.html

Application Recovery Manager (AppRM)

Application Recovery Manager (AppRM) automates restoration of application databases such as Exchange and Microsoft SQL Server. In the event of failure or corruption, it restores your business application database to the moment before an outage. Application Recovery Manager delivers a stand alone solution to augment your existing backup software strategy.
http://www.hp.com/go/apprm

HP Storage Essentials Standard Edition SRM Software

HP Storage Essentials Standard Edition Storage Resource Management Software and Systems Insite Manager with Command View EVA software provides a total solution that allows midsize businesses with limited IT staff to see the big picture thereby reducing SAN complexity. It supports Windows and Linux servers with small to medium HP storage based SANs including HP EVA, HP MSA, HP NAS, HP EML Tape, HBAs and fabric devices. HP Standard Edition SRM Software unified server and storage tool-set automates complex and manual storage process and tasks with auto discovery, visualization and topology mapping for quick device identification. HP Standard Edition SRM Software solution integrates with a rich assortment of HP software including Systems Insight Manager, and HP Essentials software. With the new Storage Essentials SRM Performance Pack you can monitor end-to-end performance of up to 2 EVA as part of the licensing for Storage Essentials SRM Standard Edition Software.

For more information on HP Storage Essentials Software visit:
http://h18006.www1.hp.com/products/storage/software/std-suite/index.html

EVA iSCSI Connectivity

EVA iSCSI support is available through the HP StorageWorks MPX200 Multifunction Router and the EVA iSCSI Connectivity Option. These powerful solution provides iSCSI connectivity to an EVA utilizing the EVA's existing Fibre Channel infrastructure.

The HP StorageWorks MPX200 Multifunction Router extends the FC SAN investment with integrated multi-protocol support, allowing customers to incorporate iSCSI servers without requiring additional storage arrays or management costs. The MPX200 offers simultaneous iSCSI and Fibre Channel support with 10GbE and 8Gb/s FC technology, providing modular multi-protocol SAN designs with increased scalability, stability, ROI and simpler to manage, secure storage solution for virtualized server environments. MPX 200's enterprise-class high-availability design provides dual hot-plug power supplies and router blades for no single point of failure. MPX200, integrated in same rack, allows customers to connect up to 4 EVA's to a single MPX200,reducing the complexity and cost of iSCSI connectivity to EVA storage arrays

The HP StorageWorks MPX200 Multifunction Router provides 1 GbE and 10 GbE iSCSI connectivity to the EVA and enables modular multi-protocol SAN designs with increased scalability, stability, and ROI on storage infrastructure.

Product Highlights

The MPX200 Multifunction Router enables organizations to integrate low-cost Ethernet connected servers with an EVA storage system by bridging the iSCSI protocol to the Fibre Channel protocol. This capability allows iSCSI servers to leverage shared SAN resources, improving asset utilization and enabling new applications. This integration greatly reduces the cost of connecting servers to centrally managed storage and helps provide a cost-effective solution to introduce utility computing into the enterprise.

An EVA with multi-protocol support also provides network storage at reduced infrastructure costs. Small and medium businesses now have a lower entry point to take advantage of SAN benefits. Large enterprises may also deploy multi-protocol SANs in departments and remote offices.

Key Benefits:

- Delivering SAN-like benefits over the Ethernet IP network, the HP StorageWorks MPX200 Multifunction Router enables access to block storage across up to 4 EVA storage systems from an Ethernet IP network.
- Provides customers a flexible and cost effective way to connect stranded servers to existing Fibre Channel storage, increasing return on investment.
- Enterprise-class high availability design provides dual hot-plug power supplies and router blades for no single point of failure.
- Modular software and hardware design enables easy upgrades to enable additional protocols or to add more ports.
- Unmatched performance: 8 Gbps Fibre Channel, 1 GbE and 10 GbE iSCSI ports deliver best in class performance.
- Advanced installation and configuration wizards allow set up in less than 25 minutes.
- Power efficient: typically dissipates 200W for a dual blade configuration.
- Extend access to FC SANs across Ethernet networks with the virtues of an FC SAN including:
  - Consolidated storage
  - Improved disk utilization
  - Improved IT efficiency

The HP StorageWorks EVA iSCSI Connectivity Option extends the advantages of Fibre Channel SANs into smaller departments and remote locations. This EVA option allows customers to incorporate iSCSI servers within SANs without requiring additional storage arrays or management costs. Use the EVA's Command View software to manage the iSCSI connectivity to the array and mount the iSCSI device in the same rack as the array.

For more information and operating system support:
http://h18006.www1.hp.com/products/storageworks/evaiscsiconnect/index.html

The EVA also supports select ProLiant Storage Servers (i.e. NAS) connected as file/print/iSCSI gateways. The ProLiant DL380 G5 x64 SAN Storage Server and DL585 G2 Storage Server each feature Microsoft's Windows Unified Data Storage Server 2003 operating system that includes Microsoft iSCSI Software Target standard, while other DL380 G5 Storage Server models offer optional support for Microsoft iSCSI Software Target. Microsoft iSCSI Software Target leverages existing management expertise and inexpensive Ethernet infrastructure to deliver IP-based block access to an EVA or Fibre Channel SAN. So ProLiant Storage Servers with iSCSI target functionality not only add file and print services to your EVA investment, but they help you save even more by enabling tiered (Fibre Channel and iSCSI) block access for application servers.

In addition, any ProLiant DL380 G5 Storage Server or DL585 G2 Storage Server is a perfect platform from which to run Command View EVA. You stretch your investment even further when you host EVA management, file and print services, and iSCSI connectivity all from the same ProLiant Storage Server

gateway solution.

For more information:
http://h18006.www1.hp.com/storage/nas.html
http://www.hp.com/go/storageservers

EVA File Services

HP StorageWorks Enterprise Virtual Array File Services (EVA-File Services) is an integrated application (block) and file storage solution. It can serve both block and file data concurrently with high availability and scalable performance. The EVA-File Services is supported by a powerfully simple suite of management software making it easy for users to achieve high levels of productivity.

The EVA-File Services is designed for mid-range and enterprise customers wanting a single storage solution for their block and file data, improved storage utilization, scalable throughput performance to meet application specific demands for consistent high transaction I/O, easy capacity expansion, instantaneous replication, simplified storage administration and high availability. Because the EVA- File Services can serve both block and file data concurrently with high availability and scalable performance, customers can use the EVA- File Services to consolidate their individual silos of storage to gain flexibility, reduce IT costs and complexity as compared to traditionally architected storage solutions.

The EVA- File Services supports both CIFS (windows) and NFS file serving. EVA- File Services is available factory integrated into the HP EVA4100/6100/8100 arrays. The EVA- File Services is delivered as an easy to install, easy to manage and easy to support solutions that helps customers lower their TCO and minimize the complexity of their storage environment.

The EVS- File Services includes redundant HP StorageWorks 4/8 Base SAN Switches, 1 HP Procurve Ethernet switch, 16 HP 4Gb Short Wave Transceivers, Ethernet interconnect cables between the internal modules, FC interconnect cables between the internal modules, power cords for all modules, and mounting hardware for all modules, installation and startup.

NOTE: EVA File Services are factory integrated and requires the purchase of an EVA4100, EVA6100 or EVA8100.

- The EVA- File Services integrates and simplifies providing a single storage solution for application (block) and file data delivering high utilization and lower TCO
- The EVA- File Services uses a single set of management tools that can be invoked from anywhere, anytime, resulting in a very operationally efficient environment to manage.
- Combining state-of-the-art application (block) data performance and file serving performance, that can scale as needs dictate, the EVA- File Services offers customer's aggregate performance levels far in excess of traditional file servers and NAS appliances.
- With the EVA- File Services you never "run out of space" because additional capacity can be added quickly and easily with any combination of high performance Fibre Channel and/or low cost FATA drives.
- EVA File Services uses state-of-the-art virtualization which improves performance, disk usage and TCO while the single, shared pool of storage allows for easy dynamic expansion, which automatically distributes data to avoid potential hot spots.
- With fully redundant components such as SAN switches, array controllers, and file serving nodes built into every unit, the EVA- File Services is perfect for demanding mid-range and enterprise storage applications.

For more information:
http://h18000.www1.hp.com/products/quickspecs/12667_div/12667_div.HTML
http://h18006.www1.hp.com/products/storageworks

Product Highlights

EVA with HP Systems Insight Manager Software	Enclosed as an accessory with all StorageWorks arrays is HP Systems Insight Manager (SIM). HP SIM is the foundation for HP's unified server-storage strategy -- it is packaged as a no-cost, customer installable management application and is derived from the heritage of Compaq Insight Manager, HP Toptools, and HP Servicecontrol. HP SIM runs on HP Windows, Linux, and HP-UX and provides discovery and identification, fault management, security administration, asset reporting, and centralized configuration management across heterogeneous servers, storage and infrastructure. HP SIM is easily extensible, integrating other HP management products and value-add plug-ins such as the ProLiant Essentials, Integrity Essentials, and Server Essentials. HP SIM relies on industry standards like SMI-S, SNMP, SSH, WBEM, and WMI to detect and report heterogeneous device attributes. HP SIM may also be configured to launch array specific applications for configuration, reporting and replication. For more information on HP Systems Insight Manager see: http://www.docs.hp.com/en/netsys.html
Clustered Server and High Availability System Support	Dual and multi-node cluster support is provided for host level fault tolerance and high system availability. See the Operating System, Cluster and High Availability Compatibility table for operating system specific support.
Multi-Server Shared Support for Storage Consolidation	Heterogeneous and homogeneous host support provides the ability to share storage between multiple servers. The EVA provides storage access control (i.e. Selective Storage Presentation or LUN masking) assuring that a host cannot access data belonging to a different host. SAN-based zoning is also supported.
Single-pathing (Single HBA per host)	Single-pathing (or single HBA per host) support is provided for all supported operating systems (but may be version dependent). Use of single-pathing, which does not offer a redundant path option, should be used with care. Failure of the single HBA will result in loss of access for that host until the HBA is replaced.
Enclosure Capacity	The EVA provides one of the highest density disk storage solutions in the industry. The EVA8100 in the 42U HP 10000 G2 Series Rack supports up to twelve 3U 14-bay M5314C FC disk enclosures for a maximum capacity of 168 disk drives and a maximum storage capacity of 168 TB of disk capacity. An expansion cabinet allows users to expand with another six enclosures for a total of up to eighteen disk enclosures, up to 240 disks, and up to 240TB.

Product Highlights

Utility Pricing solutions for StorageWorks EVA

HP offers a spectrum of offerings allowing customers to align their payments according to the usage of storage capacity.

- For customers requiring assistance in managing their storage infrastructure, Managed Storage Solution (MSS) meets that need while providing the option to acquire storage on a utility model. Customers have the ability to choose other options like Backup/Restore, Data Availability, Local Copy and Remote Copy services. All these capabilities are offered at a $/GB/Month fee.
- For customers that want to build and manage their own storage utility, Utility Ready Storage (URS) provides customers with storage that never runs out; priced as the customer uses it; and is easy to procure. URS pricing is based on $/GB/Month of average allocated capacity over the customer's minimum commitment. URS provides a unique opportunity to allow customers access to storage when they need it, permitting them to adapt to their changing business needs.
- For customers whose need is best described by predictable growth, Pay per forecast (PPF), offered from HP Financial Services, is an ideal fit. It is a step lease based solution where the payments are structured upfront according to the customer's forecasted growth.
- For even further demanding financial needs of customers, HP Financial Services are ready to craft a customized solution for them.

Please contact your local HP representative for further information

10K rpm Drive Support

The EVA supports 300/450/600 GB 10K rpm dual-ported 2/4 Gb/s FC disk. The EVA4100 Starter Kits or EVA4100 will support up to 56 disk drives. The EVA6100 will support up to 112 disk drives. An EVA8100 will support up to 240 disk drives. The EVA arrays will support single or mixed drive capacities and types (high performance and FATA) within an enclosure. HP recommends using the same drive type (the same capacity) within a disk group because virtualization allocates space proportionate to the highest capacity drive with in the group.

15K rpm Drive Support

The EVA also supports 146 GB, 300GB and 450GB15K rpm dual-ported 2/4 Gb/s FC disk drives. The EVA arrays will support single or mixed drive capacities and types (high performance and FATA) within an enclosure. HP recommends using the same drive type (the same capacity) within a disk group because virtualization allocates space proportionate to the highest capacity drive within the group.

FATA Drive Support

The EVA supports 1TB dual ported 2 Gb/s Fibre Attached Technology Adapted (FATA) disk. An EVA will support a full configuration of FATA disk drives up to the virtual device mapping limit. The EVA4100 Starter Kits, EVA4100/6100/8100 can be configured with any combination of FATA and high performance disk drives; total raw capacity will vary based upon the redundancy (Vraid) selected. A minimum of eight FATA drives are required in a configuration.

FATA drives are designed for lower duty cycle applications such as near on-line data replication for back-up. These drives should not be used as a replacement for EVA's high performance, standard duty cycle, Fibre Channel drives. Doing so could shorten the life of the drive.

NOTE: XCS V6.110 supports the 1TB FATA. It has virtual device mapping (addressable capacity) limits of 80/80/200TB (EVA4000 & EVA4100/EVA6000 & EVA6100/EV8000 & EVA8100 respectively) . Calculation of virtual device capacity includes all created virtual disks plus the mapped capacity of all snapshot, snapclone and mirrorclones on the array. The potential to reach the limits vary with the usage of the array. When installing a significant number of the 1TB FATA drives into an array contact your sales or service representative to discuss your configuration requirements. Expansion of the virtual device mapping limits will occur in Mid 2008.

Please see the following URL for more information on FATA drives, their uses and their benefits:
http://h71028.www7.hp.com/ERC/downloads/5982-7353EN.pdf

Fibre Channel Technology

The EVA4100 Starter Kits and EVA4100/6100/8100 takes advantage of the benefits of Fibre Channel (FC) in distance, performance and connectivity. The use of optical Fibre cabling allows distances between connected segments of a SAN to be up to 500 meters @ 1 Gb/s; 300 meters @ 2 Gb/s using short wave multi-mode cable and up to 10 kilometers (6.21 miles) @ 1 Gb/s when using long wave cable. The EVA4100 Starter Kit and EVA4100/EVA6100/EVA 8100 with XCS v6.1100 for HSV200 and HSV210 are 4 Gb/s enabled on each FC path, but will also support 2 Gb/s FC paths for backwards compatibility. Storage Area Networks (SANs) can be constructed using FC switches/directors for fabric connectivity (currently up to a maximum of 20 FC switches supported).

Fibre Channel Switch/Director Support

Support for up to twenty FC switches operating at 2 Gb/s and FC switches operating at 4 Gb/s allow the full benefits of a storage area network (SAN), providing exceptional connectivity while increasing the effective bandwidth of the network. Supported SAN features include Zoning for communication isolation and Inter-Switch Links (hops) up to 10 km. The EVA4100 Starter Kits and EVA4100/6100/8100 supports 4 Gb/s FC enabled with XCS vv6.110.
For more information on specific support specifications see the following Switch URL:
http://h18006.www1.hp.com/storage/saninfrastructure/switches.html

Transfer Speeds

The EVA4100 Starter Kits and EVA4100/6100 has two FC host interfaces per HSV200-B controller; four for a controller pair. The EVA8100 has four FC host interfaces per HSV210-B controller; eight for a controller pair. Each controller-to-host interface is 4 Gb/s. The controllers are also compatible with 2 Gb/s and 4 Gb/s FC switches, HBAs, servers and other storage solutions.

Each EVA controller pair interfaces with M5314C drive enclosures either directly or through fibre channel loop switches. With 2 (for EVA4100/6100) and 4 (for EVA8100) device ports per controller and dual FC I/O modules per drive enclosure, each controller can connect to each FC drive A and B port. So each controller has a redundant path to each drive.

Easy Installation

The EVA4100 Starter Kits and EVA4100/6100/8100 predefined models ship from the factory fully configured. After unpacking, they can be plugged into power sources, connected to the FC SAN, enabled and configured using Command View EVA and they are ready for use.

Installation and start-up services are part of the EVA Foundation Service Solution warranty and are available on most of the EVA4100/6100/8100 offerings.

NOTE: Except in EMEA, installation and start-up services are not included in the purchase of the EVA4100 Starter Kits, but are highly recommended.

Product Highlights

Fault Recovery -- HP Continuous Access EVA for Disaster Tolerance Applications

HP StorageWorks Continuous Access EVA remote copy functionality is available for use with the EVA4100 Starter Kits and EVA4100/6100/8100 arrays. For additional information about Continuous Access EVA visit: http://h18006.www1.hp.com/storage/software.html

Continuous Access EVA is a controller-based application that performs real-time replication between HP StorageWorks Enterprise Virtual Arrays. The solution is enhanced to perform remote replication, and deliver high data availability and performance to users on Fibre Channel based campus, metro or continental Storage Area Networks (SANs).

HP StorageWorks Disaster Tolerant Solution for mySAP Business Suite on EVA offers a business continuance solution for SAP environments, where data integrity and value added functionality are high priorities. Best practices for implementing remote mirroring of an SAP database as part of an overall data protection strategy with SAP applications can be found at: http://h71028.www7.hp.com/ERC/downloads/4AA1-5683ENW.pdf

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High Availability/ Fault Tolerance/ Hot pluggable support

All EVA are configured with dual HSV controllers that operate in a redundant mode. Each controller has redundant Fibre Channel (FC) host ports (2 for the EVA4100 Starter Kits EVA4100/6100 and 4 for the EVA8100). Each EVA4100/6100 controller has two FC device ports and the EVA8100 controller has four FC device ports. For the EVA4100 Starter Kits and EVA4100/6100/8100 in the event of a path failure, the alternate paths to the controller can be utilized with the use of multi-path software in the Operating System or in Secure Path software.

On the EVA4100 Starter Kits and EVA4100 each port connects to one FC I/O module on a drive enclosure. Up to four drive enclosures can be connected in a FC loop arrangement with a controller pair and connect to one port of up to 56 drives. With the two FC ports per controller, each controller can connect to both ports on up to 56 disk drives for redundant paths to all 56 drives. On the EVA6100 each port connects to a FC loop switch which in turn connects to one FC I/O module on up to eight drive enclosures and to one port of up to 112 disk drives. On the EVA8100 each port connects to a FC loop switch which in turn connects up to one FC I/O module on the drive enclosures and to one port of up to 168 disk drives. With the four FC ports, each controller can connect to both ports on up to 240 disk drives for redundant paths to all 240 drives.

EVA8100 configurations, with more than four drive enclosures, are configured with two pairs of FC-AL switches connected between the two controllers and the drive enclosures. Up to nine drive enclosures can be redundantly connected to each pair of switches, which are redundantly connected to each controller. Each loop switch is independently powered and cooled. Should one loop switch fail, it can be replaced while I/Os continue through the remaining redundant loop switch.

The HSV controllers also have dual redundant hot plug power supplies and dual redundant hot plug blowers. Each controller has hot plug cache batteries to maintain cache contents for up to 96 hours in case of a total power failure.

The M5314C FC drive enclosure has dual redundant hot plug FC I/O modules that allow the controllers to distribute I/Os between the two modules and provides redundant paths should either FC I/O module become unavailable. The enclosure also has dual redundant hot plug power supplies and dual hot plug blowers. The enclosure also has a hot plug Environmental Monitoring Unit (EMU) to monitor and report the condition of the power supplies and fans. The EMU can be replaced without affecting I/O operations.

The FC and FATA disk drives have dual FC ports which can be redundantly accessed by each controller. The drives are hot plug. The EVA, as a virtualized array, always provides striping of the drives across the entire disk group. The drives can then be arranged, using redundant Vraid1 or Vraid5 protection, so that a drive failure will not cause loss of data. Optional distributed sparing (virtual sparing) can be configured

so that a drive failure will trigger an automatic rebuild of the Vraid1 or Vraid5 data set into spare space. The EVA sparing protection will utilize available disk space in the disk group and when that is exhausted, the established virtual spare space. This methodology of using unused capacity can give customers the ability to have many disk worth of spare space for maximum data availability protection and peace of mind.

All EVAs have dual redundant power distribution. Two independent power cords distribute power through two Power Distribution Units (PDUs) to each side of the EVA cabinets and to each power supply of the controllers and to each power supply of the drive enclosures and to each of the FC loop switches. Each cabinet power cord can be connected to independent power sources. For maximum availability, a customer should provide redundant power from independent power circuit breakers, independent power lines from the power company and even independent power companies.

Integration

HP EVA4100 Starter Kits and EVA4100/6100/8100 models are 4Gb/s FC Switched Fabric "enabled" and can operate on 4Gb/s or 2Gb/s FC Switched Fabric SANs. They can co-exist in the same FC SAN with EVA3000 and EVA5000 FC storage solutions and many other SAN devices.

EVA Manageability

HP StorageWorks Command View EVA provides the capability to manage the EVA Array family in a SAN or direct connect Fibre Channel host attach configuration. HP Command View EVA software runs on a variety of server configurations; ProLiant DL380 G5 and DL585 G2 Storage Servers are the perfect platforms from which to run Command View EVA. ProLiant Storage Server gateway models (including the DL380 G5 x64 SAN Storage Server and DL585 G2 Storage Server) allow you to stretch your investment by combining EVA management, file and print services, and iSCSI connectivity all on the same platform.

The powerful Command View EVA provides an easy mechanism to manage up to 16 EVA units in a SAN configuration. Industry leading security enhancements in Command View now allows administrators to take advantage of Windows domains and local groups. Command View integrates with Windows Active Directory to authorize and authenticate users. In addition, all user actions and events that change system state are logged. Administrators can now use the audit logging capabilities to see who did what and when.

The Command View EVA media kits and license are required with all EVA models. HP Command View EVA requires a License to use (LTUs) equal to, or greater than the total raw capacity of each array. For the HP EVA4100 Starter Kits, Command View EVA software is included as well as licensing for up to 4 TBs as part of the bundled offering.

NOTE: HP Command View EVA software and up to 4-1 TB License to Use (LTU) are included in the EVA4100 Starter Kits.

Product Highlights

Performance

Fibre Channel host connections provide up to 200MB/s bandwidth for each path. Dual mirrored port write caching capability, with battery backed cache, maintains optimal availability while assuring data integrity in the event of a failure.

Each HSV200-B controller (for EVA4100 Starter Kits, EVA4100/6100 configurations) has two Fibre Channel host ports (four ports in a redundant pair of controllers) assuring the availability of bandwidth for the most demanding applications. In addition, up to 4GB of cache per controller pair ensures high performance.

Each HSV210-B controller (for EVA8100 configurations) has four Fibre Channel host ports (eight ports in a redundant pair of controllers) assuring the availability of bandwidth for the most stringent applications. In addition, up to 8GB of cache per controller pair ensures high performance.

Scalability

A storage management server can manage up to 16 EVA controller pairs (EVA 3000s, EVA5000s, EVA4x00 Starter Kits, EVA4x00s, EVA6x00s and/or EVA8x00s) in any one fabric. An EVA controller pair will support up to 256 host connections (up to 1024 HBAs).

The EVA4100 Starter Kits and EVA4100 will scale up to 56 disks (56TB using 1TB FATA disk drives, and 25.2TB using 450GB high performance disk drives).

The EVA6100 will scale up to 112 disks (112TB using 1TB FATA disk drives, and 50.4TB using 450 GB high performance disk drives).

The EVA8100 will scale up to 168 disks in a single cabinet and with the addition of an optional utility cabinet, an EVA8100 will scale up to 240 disks (240TB using 1TB FATA disk drives, and 108TB using 450GB high performance disk drives).

Configure to Order (CTO) options and the HP 10000 G2 Series Racks allow even greater server and device integration, flexibility and scalability for the EVA4100 Starter Kits and EVA4100/6100/8100. Data center managers can customize server, storage and back-up configurations as well as using the residual cabinet U space to mount Storage Management servers, switches and have the peace of mind that it is built with HP factory precision manufacturing. The EVA8100 2C2D, 2C6D, and 2C12D, now allows customers to configure-to-order their new EVA8100 units from HP manufacturing.

Product Highlights

EVA as Virtualized Storage behind the XP

HP StorageWorks EVA4100 Starter Kits and EVA4100/6100/8100 disk arrays can be connected as external storage devices behind HP StorageWorks XP disk arrays.

The XP24000/XP20000 simplifies the management of heterogeneous SAN environments through its ability to support up to 247 PB/ 96 PB respectively of external storage-all configured 'behind' a single XP. XP External Storage software uses advanced virtualization technology to allow storage administrators to host XP Disk Array LUNs on externally attached disk arrays. Any Fibre Channel port from any CHA pair installed in any slot can be used to connect to external storage EVA4100 Starter Kits and EVA4100/6100/8100.

With external EVA storage, XP presents multiple tiers of storage to a wide range of host systems. Instead of seeing a confusing collection of arrays, host systems perceive all the data to be stored inside the XP disk array. In effect, the XP disk array becomes the storage controller for a flexible, multi-tiered collection of EVAs with a range of cost and performance capabilities. By configuring EVA storage arrays behind a single XP24000/XP20000, data can be moved back and forth dynamically across tiers, all of which is invisible to the applications.

The XP12000's virtualization feature also reduces the total cost of storage ownership by:

- Exploiting common storage management across multiple vendors' systems
- Easily deploying a dual-vendor policy
- Facilitating simpler and lower cost data migrations
- Increasing storage utilization
- Extending the life of legacy storage

For more information please refer to the HP StorageWorks XP External Storage Software web page at: http://h18006.www1.hp.com/products/storage/software/extstxp/index.html.

Servers Supported – Single and Clustered

HP servers (HP-UX, ProLiant, AlphaServers)
X86 servers
Dell servers
Sun servers
IBM servers
Apple XsApple Servers (PowerPC and Intel)
Fujitsu Siemen & Primergy Servers (Bx6x0, Rx and Tx)

Product Highlights

EVA Required Software

HP StorageWorks EVA4100/6100/8100 ships with XCS V6.110 factory installed on new EVAs. XCS V6.110 supports all 2 and 4Gb EVA4000/6000/8000 and EVA4100/6100/8100models The base XCS License to use for the EVA is contained in the hardware shipment.

HP StorageWorks EVA4x00/6x00/8x00 XCS v6.110 controller media download is available from HP.com. These downloads are available for upgrades of existing 2 and 4Gb EVA4x00/6x00/8x00s. The EVA Release Notes and Upgrading Product software Guide are also available from the same location.

NOTE: Review the Release Notes and Upgrading Product Software documentation and compatibility requirements of all installed Array Integrated Software completely before upgrading. Downgrading an EVA XCS version is not recommended without HP Service support. Contact HP Services if you have any questions.

XCS V6.110 is available for download at the "software & drivers" link:
http://h18006.www1.hp.com/products/storageworks/eva/index.html

HP StorageWorks Command View EVA is required software for all EVA models. HP Command View EVA requires a License to use (LTUs) equal to, or greater than the total raw capacity of each array.

NOTE: The minimum supported version of XCS on the EVA4100/6100/8100 is XCS V6.110

HP StorageWorks EVA Software Selector

The following matrix will assist in identifying some of the complimentary HP software products can be used along with the EVA to support various business applications. Please see your Sales Representative, or go to http://www.hp.com/ for more information on these valuable HP software products.

Just click on the product name and you will be linked to the product specification URL.

	EVA Device and Configuration Management	Backup Solutions	Business Continuity/ Local Mirroring	Disaster Recovery/ Remote Mirroring	Storage Resource Management	Unified Server and Storage Management	Application Integration
HP Business Copy EVA		X	X				X
HP Continuous Access EVA				X			
Dynamic Capacity Manager	X						
http://h18006.www1.hp.com/products/storage/software/eva_dcm/index.html							
HP Storage Essentials SRM Suite (Heterogeneous, multivendor)	End to end discovery, monitoring, provisioning, Chargeback, File analysis, reporting	X Backup monitoring/ reporting			X	Yes with HP SIM	X (Oracle, Exchange, Sybase, MS SQL, InterSystems Cache' DB)
HP Storage Essentials SRM Standard Edition Software (Small to medium HP Storage-based SANs)		X Backup monitoring/ reporting			X	X	X (Oracle, Exchange, Sybase, MS SQL,

Product Highlights

							InterSystems Cache' DB)
HP Storage Essentials SRM Performance Pack Software					End to end performance monitoring/analysis for EVA or multiple EVAs		
HP Data Protector		X	X				X
HP Systems Insight Manager						X (Included with EVA)	
HP Command View EVA	X (Required)						
Application Recovery Manager (AppRM)		X	X				X
HP Cluster Extension EVA				X			
HP Metrocluster/ Continentalcluster with Continuous Access EVA				X			
HP Storage Mirroring				X			

EVA and Value-added Software Compatibility

Model	XCS Software	HP Command View EVA*	HP Continuous Access EVA**	HP Business Copy EVA**	HP Replication Solution Manager (RSM)
EVA4000/6000/8000	EVA4000/6000/8000 v5.1 (XCS V5.1)	Command View EVA v5.0	Continuous Access EVA v2.3	Business Copy EVA v3.2	Replication Solution Manager v 2.0
EVA4000 Starter Kits, EVA4000/6000/8000	EVA4000/6000/8000 v6.0 (XCS V6.0)	Command View EVA v6.0x	Continuous Access EVA V3.0	Business Copy EVA v4.0	Replication Solution Manager v 2.1
EVA4x00 Starter Kits, EVA4x00/6x00/8x00	EVA4x00/6x00/8x00 v6.110 (XCS V6.11010)	Command View EVA v7.0 & v8.0	Continuous Access EVA	Business Copy EVA	Replication Solution Manager v 3.0

*HP StorageWorks Command View EVA is required software for all EVA models. HP Command View EVA requires a License to use (LTUs) equal to, or greater than the total raw capacity of each array. If the EVA does not have the proper licensed capacity it will be in violation of the End User License Agreement (EULA).
**HP StorageWorks Continuous Access EVA and HP StorageWorks Business Copy EVA requires a License to use (LTUs) equal to, or greater than the total usable amount of data being replicated on each array. If the EVA does not have the proper licensed capacity it will be in violation of the End User License Agreement (EULA).
NOTE: HP StorageWorks Command View EVA software and 4-1 TB LTUs are included in the EVA4100 Starter Kits and in the EVA4100 SAN Starter Kit.

Operating Systems, Cluster and High Availability Compatibility EVA4100 Starter Kits, EVA4100, EVA6100 and EVA8100 Models

Operating System	Versions Supported	Cluster Server or High Availability Software	HA Versions Supported	Failover Software

Product Highlights

Microsoft Windows XP 32-bit*****	Professional 2	SP2	Not supported	N/A	Not supported
Microsoft Windows 2000	Server Advanced Server	SP4, SP4 Roll-up 1 SP4, SP4 Roll-up 1	Microsoft Cluster Server (MSCS) Veritas Foundation Suite/HA	Windows 2000 Advanced Server Windows Server 2003 Enterprise Edition Windows 2003 DataCenter Edition* (64-bit) 4.3 (Win 2003) MP2 5.0 (Win 3003)	MPIO DSM Full Feature for Windows (Available on HP web) Veritas MPIO DSM
Microsoft Windows 2003/32-bit***	Standard Enterprise	SP2, R2 SP2, R2			
Microsoft Windows 2003/x64***	Standard Enterprise	SP1, R2 SP1, R2			
Microsoft Windows 2003/IA64***	Enterprise DataCenter	SP1, SP2 SP1, SP2			
Microsoft Windows 2008 32-bit, x64*	Standard Enterprise Server Core			5.0	HP MPIO Feature DSM
Microsoft Windows 2008 IA64*	Enterprise DataCenter				HP MPIO Feature DSM
HP-UX	11i v1 (PA-RISC) 11i v2 (PA-RISC & Integrity) 11i v3 (PA-RISC & Integrity)		HP ServiceGuard (Metro or Continental clusters)* Veritas Foundation Suite/HA	11.14 (11i v1) 11.15 11.16 11.17 3.5 (11i v1 & 11i v2) 4.1 (11i.v2 & 11iv3) 5.0 (11iv2) 5.0 (11iv3)***	PV-Links, HP MirrorDisk UX, Native in OS Secure Path V3.0F SP1, SP 2 for HP-UX Veritas DMP 3.5 (11i v1& 11i v2) Veritas DMP 4.1 (11i v2)
Linux	Red Hat EL Advanced Server 3.0 (IA32, IA64 & x86_64)- U8, U9**** Red Hat EL Advanced Server 4.0 (IA32, IA64 & x86_64)- U5, U6**** RedHat Enterprise Linux 5 (IA64 & EM64UT Fujitsu Siemen & Primergy Bx6x0, Rx, Tx) United Linux 1.0/SLES8 SP4 (IA32, IA64 & x86_64) SUSE/SLES9 (IA32, IA64 & x86_64)- SP3**** SUSE/SLES10 (IA32, IA64 & x86_64)- ****		HP ServiceGuard for Linux VERITAS Foundation Suite/HA for Linux Steeleye Lifekeeper Cluster Service Red Hat Cluster Suite Prime Cluster	11.16 4.1 (SLES9& REL4 only) 4.6.2 (REL 3) 5.0 (SLES9& REL4 only, x86_64)(RHEL5 U1) PCL 4.2.A00 (Fujitsu-Siemen)	Qlogic Multipath driver 7.xx.xx for Red Hat 3.0 and United Linux 1.0 (SLES 8) Qlogic Failover driver 8.0x.xx for Red Hat EL AS 4.0 and SUSE/SLES9 Device Mapper V3.0 Device Mapper 4.0*** SAN Surfer Simple SAN Connection Mgr. 1.0.0 EMULEX Multipluse 2.2.29 HBA Anyware 3.2a16

Product Highlights

Apple Mac OS X	Tiger - 10.4.7minimum Leopard - 10.5,10.5.1	N/A	N/A	ATTO Multipath driver
HP Tru64 UNIX	v5.1b-3 v5.1b-4	HP TruClusters	5.1b	Native in OS
HP OpenVMS	Alpha: 7.3-2, 8.2, 8.3 Integrity: 8.2-1, 8.3, 8.3-1H1	HP OpenVMS Clusters	7.3-2 8.2 8.2-1 8.3 8.3-1	Native in OS
Sun Solaris	8 9 10 (x86/64) (32-bit/64-bit)	SunCluster VERITAS Foundation Suite/HA	3.1, 3.2 4.1 MP1, 5.0	MPxIO for Solaris, Native in OS Veritas DMP 4.1
IBM AIX	5.2 5.3 6.1	HACMP (does not support 6.1) VERITAS Foundation Suite/HA	5.2, 5.3, 5.4 5.0(AIX 5.3)	MPIO for IBM AIX, Native in OS
Novell NetWare	6.5 SP6 and SP7	NetWare cluster server	1.8	MPIO for NetWare, Native in OS
VMware	ESX Server 2.5.3, 2.5.4, 3.0.1 and 3.5x	-MSCS Clustering**	Windows Server 2003	MPIO for VMware, Native in OS
Citrix	Integrated Citrix XenServer HP Enterprise Citrix Xen Enterprise 4.1.0-7846 Guest Operating Systems Supported: • Red Hat 5.1 • SuSE 10 SP1 • Windows 2003 x64		Service Guard for Linux	Native Device Mapper MPIO

*Follows initial release, check posted Operating Specific Release Notes or software documentation
**Some versions of MSCS are not supported, for more detailed information on Cluster Server Support see the VMware Release Notes http://h18006.www1.hp.com/products/storageworks/eva8000/index.html
***For Disaster Tolerance configurations in the EVA/Windows 2003 environment, please refer to the HP Cluster Extension EVA QuickSpecs: http://www.hp.com/go/clxeva
****For Disaster Tolerance configurations in the EVA/RedHat EL 4 or SUSE/SLES 9 or 10 environments, please refer to the HP Cluster Extension EVA QuickSpecs: http://www.hp.com/go/clxeva
*****Support on EVA4000/4100 only. For information on the specific Microsoft Windows XP configuration support see the SAN Design Guide:
http://h20000.www2.hp.com/bizsupport/TechSupport/DocumentIndex.jsp?contentType=SupportManual&lang=en&cc=us&docIndexId=179111&taskId=101&prodTypeId=12169&prodSeriesId=470490

Cabinet Density

A single 42U EVA cabinet can house up to 168TB of raw capacity (using 1TB FATA disks).
NOTE: Maximum cabinet capacity will vary based available upon U space. The total number of controllers, enclosures supported and other devices.

Product Highlights

Racking Guidelines and Power Distribution

Distribution Units (PDUs) according to the voltage used in the country the solution is ordered. These PDUs provide redundant power and are located in the bottom and back of the cabinet for power cable entrance by the floor. The PDUs are 220/240V. The 220/240V PDUs are 0U high with a total of two AC power cords extending outside the cabinet.

For the EVA4100 Starter Kits, EVA4100, EVA6100 and EVA8100 a variety of HP 10000 G2 Series Rack offerings and integration options are available. The EVA configurator tools utilize a 42U HP 10000 G2 Series Rack as the standard recommendation and will provide a 220/240V PDU and country specific power cords. The EVA4100 Starter Kits and EVA4100/6100/8100 configurations can be customized to meet a wide variety of customer needs. Both the height and types of rack and PDUs can be modified based upon the specific customer need. If other devices, such as servers, switches or back-up devices, are to be installed with the EVA; this can be specified and the cabinets and PDUs can be modified to support the configuration. The EVA4100 Starter Kits and EVA4100/6100 also support 22U and 36U racks and 100V PDUs.

For more information on configuration and PDU support for the 10000 G2 Series Rack please see the following URL:
http://h18004.www1.hp.com/products/servers/proliantstorage/racks/10000g2series.html

The EVA also supports the 5642 (42U) Rack Cabinet System as a field installed option.

NOTE: When adding additional devices to existing racks ensure that the installed PDUs will support the new power requirements.

Total Cost of Ownership

The unique virtual architecture allows up to twice the normal effective capacity utilization of traditionally architected storage offerings. And with Virtually Capacity-Free Snapshot (Vsnap), significant duplicate capacity requirements can be eliminated resulting in fewer/smaller storage acquisitions.
The EVA has one of the highest density disk storage solutions in the industry. Additionally, the unique virtual architecture allows up to twice the normal effective capacity utilization of traditionally architected storage offerings. And with the virtually Capacity-Free Snapshot (Vsnap), FATA disk drives and the ability to change Vraid types, significant amount of duplicate capacity requirements can be eliminated, resulting in fewer/smaller storage acquisitions.

HP Care Pack Services

HP Care Pack Services offer upgraded service levels to extend and expand your standard product warranty with easy to buy, easy to use support packages that help you make the most of your hardware and software investments. They let you choose the support levels that meet your business requirements, from basic to mission-critical. They help you contain total cost of ownership.

HP Care Pack warranty extensions can be purchased along with HP products to cost-effectively upgrade or extend your warranty. For many products, post-warranty HP Care Pack Services are available when your original warranty has expired.

Why purchase an HP Care Pack service?

Your standard warranty protects against product defects. HP Care Pack Services help you guard against unplanned downtime, which can reduce your productivity and profitability. These convenient service packages:

- Protect your investment in HP products
- Provide consistent, predictable levels of support across your entire department or business
- Ease budget planning with fixed-cost support that includes parts and labor
- Give you direct access to proven technical and problem-solving expertise
- Offer a choice of response-time and repair-time commitments
- Deliver prompt, measurable results
- Are available whenever and wherever you do business

HP Care Pack availability may vary by country and product.

Supporting your Adaptive Enterprise journey

HP Services helps you make the Adaptive Enterprise real for your organization. The breadth, depth, and quality of HP hardware and software support services can help you **improve the performance** of your IT support processes and resolve the complex software and hardware problems that tax user productivity. HP Care Pack services help you **increase IT environment stability**, efficiency, and agility from the desktop to the data center, and improve the productivity of your employees.

Warranty and Services Included with the Product

The EVA4100 Starter Kit, the EVA4100 SAN Starter Kit , and the EVA4100 Starter Kit for HP BladeSystems warranty includes 1-year, 9x5 basic hardware support, with next business day response, and 1-year, 9x5 XCS phone-in support and updates.

HP warrants only that the Software media will be free of physical defects for a period of ninety (90) days from delivery.

EVA4100 Starter Kits Array Installation and Startup Service is not included, but is highly recommended, except in EMEA. In EMEA, the EVA4100 Starter Kit includes Installation and Startup Service.
HP Care Packs are available to upgrade to 3 years or higher levels of support services.

NOTE: This offering is supported for factory integration in the Americas and in Asia Pacific. Field installation of the EVA Starter kits is available worldwide.

The EVA4100/6100/8100 Foundation Service Support factory warranty (for most models as called out in the product description) includes Array Installation and Startup Service, 2-year hardware support, with 4-hour remote response on a 24x7 basis as well as 2-year, 24x7 XCS phone-in support and updates.
HP warrants only that the Software media will be free of physical defects for a period of ninety (90) days

from delivery.

HP EVA Warranty includes support for Customer Self Repair. For EVAs with a warranty entitlement start date of 2/12/2007 or later the hard disk drives with drive firmware code load, bezels, and the controller enclosure's cache batteries, power supplies, fan, and optical control panel replacement are mandatory CSR. Customers may ask HP Services to replace these replaceable units (RUs) or do a firmware upgrade of the disk drives for an additional charge. Other EVA RUs available for optional customer self repair include cables, transceivers, and the disk shelf power supplies and fans.

Customers who purchase an HP EVA Support Agreement have the option to perform Customer Self Repair or receive on site support.

Please refer to HP's Limited Warranty Statement for further details:
http://h18006.www1.hp.com/products/storageworks/warranty.html

For more information about HP's Global Limited Warranty and Technical Support, visit
ftp://ftp.compaq.com/pub/products/storageworks/warranty/EN_321708-008.pdf

HP warrants the HP 10000 G2 Series Rack according to the standard rack product warranty. Please refer to product specification for further details:
http://h18004.www1.hp.com/products/servers/proliantstorage/racks/index.html

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Recommended Services

HP SAN Solution Service

- Quickly realize the benefit of your SAN investment while reducing overall cost of ownership
- Fast, expert implementation that guards against unexpected compatibility issues, minimizes disruption to your business and optimizes performance
- Provides a fully installed, configured and documented SAN with scalability that allows for additional capacity as your business grows

HP Critical Services

- Boost business productivity through increased server, storage, networking, and applications availability
- Minimize business losses caused by IT downtime
- Reduce risk and improve efficiency by proactively managing changes across your IT environment
- Resolve complex problems quickly through direct access to HP Services expertise and hands-on assistance
- Rapidly access single-source support from a team familiar with your business and technology infrastructure
- Free your IT staff to focus on strategic business issues

HP Proactive 24

- Enhanced operational effectiveness and availability with proactive problem identification and solutions recommendations
- Partner with technical experts who help coordinate support, provide hands-on assistance, and share industry best practices and HP know-how with your staff
- Rapidly access single-source support spanning your environment from servers to storage to networking
- Obtain personalized services tailored to your business environment and objectives
- Anticipate necessary change - and execute it correctly the first time
- Efficiently manage infrastructure resources to meet your performance objectives

HP Support Plus 24	• 24x7 4-hr. onsite hardware support • Material and parts included • Work to completion for hardware support • 24x7 2-hr response XCS phone-in assistance • Remote problem diagnosis & support • Escalation management • Software product and documentation updates • License to use and copy software product updates • Software electronic support
HP Software Maintenance Service	• Improve the productivity of system managers and operators • Improve system performance and reduce downtime due to software defects • Expedite problem resolution through expert-level technical resources • Enjoy consistent service coverage across geographically dispersed sites • Update HP and selected third-party software at a predictable cost • Take advantage of subscription savings on software updates • Keep your license compliancy up-to-date

Available HP Care Pack Services

Extend your product warranty with a wide choice of cost-saving support packages.

HP Care Pack Services are sold by HP and HP authorized enterprise and commercial resellers. Services for customers purchasing via direct and enterprise resellers are quoted using HP order configuration tools. Additional information about HP Care Pack Service features and benefits is available at http://www.hp.com/hps/carepack/services/.

Key for HP Care Pack Service availability in the table below:
E = Service available for customers purchasing direct and via enterprise resellers
C = Service available for customers purchasing via commercial resellers
N/A = Service not applicable

HP Care Pack Services Deployment and Per Event Services	Service Available
HP Installation	N/A
HP Installation & Startup	Included with: EVA4100/6100/8100 Optional for: EVA4100 Starter Kits, except in EMEA, where it's included
HP Implementation	E for: EVA4100/6100/8100 E/C for: EVA4100 Starter Kits

For more information about Deployment and Per Event Services for HP Storage, visit http://www.hp.com/hps/storage/.

Service and Support, HP Care Pack, and Warranty Information

HP Care Pack Services Availability Services	1 yr	3 yr	4 yr	5 yr
HP 4 Hr, 24x7 Hardware Support	E/C (EVA4100 Starter Kits only)	E/C	E/C	E/C
HP Software Support	E/C	E/C	E/C	E/C
HP Software Support 24x7	E/C	E/C	E/C	E/C
HP Support Plus	E/C	E/C	E/C	E/C
HP Support Plus 24	E/C	E/C	E/C	E/C
HP Proactive Essentials 24x7 Unlimited	E/C	E/C	E/C	E/C
HP Proactive 24 Service	E	E	E	E
HP Critical Service	E	E	E	E

To find HP Care Pack Services available via HP authorized commercial resellers, visit http://h30125.www3.hp.com/csn/salesmktg/elfpack/elf_nonlkup_ctrylang.asp?code=ELNL

Deployment and Per Event Service Descriptions

Availability Assessment for SANs

- Recommendations for reducing or eliminating risks to the availability of your SAN infrastructure.

SAN Solution Service

- You get a powerful network storage solution up-and-running quickly and efficiently with minimum disruption and rapid returns on your SAN investment.

Data Migration

- Transfers your critical information to a new or reconfigured storage array in an open systems environment - across a data center or around the world.

Data Replication Solution Service

- Ensures a timely, cost-effective deployment of your data replication solution cuts risk and shortens your time-to-results.

Data Sanitation Service

- Provides a method for removing data from rotational hard disk media preventing sensitive information from being retrieved or re-created. It recommended to remove data during asset retirement, leasing returns, hardware upgrades, or redeployment of storage devices.

Service and Support, HP Care Pack, and Warranty Information

eSupport

HP eSupport is a portfolio of technology-based services that assist you with managing your business environment - from the desktop to the data center.

Support Portal
The HP support portal provides one-stop access to the information, tools and services you need to manage the daily operations of your IT environment.

Features include:

- Access to self-solve tools (including search technical knowledge base)
- Efficient logging and tracking of support cases
- Collaboration with other business and IT professionals
- Download of patches and drivers
- Access to diagnostic tools
- Proactive notification of relevant information

Access to certain features of the support portal requires an HP service agreement. To access the support portal, visit http://www.hp.com/support

Instant Support Enterprise Edition (ISEE)
HP Instant Support Enterprise Edition (ISEE) provides a single remote monitoring and support solution for your IT data center. ISEE uses continuous hardware event monitoring and automated notification to identify and prevent potential critical problems.
ISEE is a no charge feature of the EVA Foundation Service Solution warranty. Notification and status information can be sent to a HP Service Center or provided for customer monitoring.
For more information or to download ISEE, visit http://www.hp.com/go/instantsupport

ISEE can be used to facilitate customer replacement of certain EVA replaceable units (RUs) . (See the Warranty and Services Included with the Product section of this document for the RU list.) A failing or failed device would be reported to HP Services via (ISEE)/Proactive Replacement Service (PRS). The customer would be contacted and arrangement made to either utilize mandatory or optional customer self repair or arrange for the repairs via warranty, CarePack, or time and materials as applicable.

Operator control panel (OCP) failure is the only device not addressed by ISEE. If, for example, the panel display or a button appears broken, customers need to call HP to initiate repair.

Customer self repair instructions, in seven local languages, are available in the component spare kits (RUs) and the business support center at www.hp.com. Video based instructions are available under "Customer self repair steps" and printable replacement instructions are listed under "Manuals" at the following location:
http://h20000.www2.hp.com/bizsupport/TechSupport/Home.jsp?&lang=en&cc=us&prodTypeId=12169&prodSeriesId=470490&submit.y=9&submit.x=7&lang=en&cc=us

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HP Education Services

Training for the Enterprise Virtual Array is now offered as part of HP comprehensive curriculum of HP Storage, Storage Management, and IT Service Management courses. These courses will provide the training required to realize the full potential of your HP EVA Virtual Array storage solutions, optimize your systems and SAN for highest efficiency, and achieve better return on your IT investments.

For more information about HP Education Services for Storage and SAN, visit
http://education.hp.com/curr-storsan.htm

Service and Support, HP Care Pack, and Warranty Information

Awards

J.D. Power Gives HP a Seal of Approval 27-Nov-2005
Good service is a key factor in deciding which computer or printer to buy these days, and Hewlett-Packard hopes a customer service endorsement from J.D. Power and Associates will help boost sales of HP products. HP said this week it is the first company to receive the **J.D. Power and Associates Certified Technology Service and Support certification** "for providing an outstanding customer service experience."

Consumers will soon see the J.D. Power and Associates service mark on product boxes, web sites and advertising for everything from HP PCs and all-in-one devices to HP cameras and fee-based services. To earn the certification, HP performed within the top 20 percent of technology support organizations on a variety of customer service criteria. J.D. Power and Associates found that HP has met or exceeded this new standard for customer satisfaction in supporting its North American customers.
http://www.hp.com/hpinfo/newsroom/press/2005/051116a.html

HP Receives Two Service and Support Industry Awards; Inducted into Association Hall of Fame 14-Apr-2006
HP has received two STAR Awards for Best Practices from the Service & Support Professionals Association (SSPA) and was consequently inducted into the SSPA Hall of Fame for winning its fifth award. The STAR Awards are the only service and support industry award from a professional association dedicated to serving industry professionals. http://www.hp.com/hpinfo/newsroom/press/2006/060414a.html

Additional Services Information

For more information about Deployment, Per Event, Consulting and Education services for HP Storage, visit: http://www.hp.com/hps/storage/
For more information about HP Care Pack Services for Storage, visit:
http://www.hp.com/hps/carepack/storage/cp_networked.html
For more information about HP Storage Software, services and updates, visit:
http://h18006.www1.hp.com/storage/software.html
If you have specific questions, contact your local HP representative. Contact information for a representative in your area can be found at "Contact HP" http://www.hp.com

Family Information

Model	EVA4100 Starter Kits, EVA4100	EVA6100	EVA8100	EVA8100 With expansion cabinet
Drive Interface	Dual ported 2 Gb/s FC-AL	Dual ported 2/4 Gb/s FC-AL	Dual ported 2/4 Gb/s FC-AL	Dual ported 2/4 Gb/s FC-AL
Controller Software	XCS v6.110	XCS v6.110	XCS v6.110	XCS v6.110
Cache per controller pair	4GB	4GB	8GB	8GB
RAID Support	Vraid0, Vraid1, Vraid 0+1, Vraid5, Vraid 0+5 & Cross Vraid Snaps	Vraid0, Vraid1, Vraid 0+1, Vraid5, Vraid 0+5 & Cross Vraid Snaps	Vraid0, Vraid1, Vraid 0+1, Vraid5, Vraid 0+5 & Cross Vraid Snaps	Vraid0, Vraid1, Vraid 0+1, Vraid5, Vraid 0+5 & Cross Vraid Snaps
Host ports	Four 4Gb/s FC	Four 4Gb/s FC	Eight 4Gb/s FC	Eight 4Gb/s FC
Device bandwidth	8 Gb/s FC-AL	8 Gb/s FC-AL	8 Gb/s FC-AL	16 Gb/s FC-AL
Device FC-AL switches	0	2	4	4
Maximum Drives per model	56	112	168	240
Redundant Controllers	Yes	Yes	Yes	Yes
Drive Capacities	300GB 10K rpm 450GB 10K rpm 600GB 10K rpm 146GB 15K rpm 300GB 15K rpm 450GB 15K rpm 1TB FATA	300GB 10K rpm 450GB 10K rpm 600GB 10K rpm 146GB 15K rpm 300GB 15K rpm 450GB 15K rpm 1TB FATA	300GB 10K rpm 450GB 10K rpm 600GB 10K rpm 146GB 15K rpm 300GB 15K rpm 450GB 15K rpm 1TB FATA	300GB 10K rpm 450GB 10K rpm 600GB 10K rpm 146GB 15K rpm 300GB 15K rpm 450GB 15K rpm 1TB FATA

NOTE: EVA4100 Starter Kit includes a 2C1D configuration, plus 8- FC HDDs (in either 146GB 15K or 300GB 10K capacities), and Command View EVA software, and up to 4TBs of Command View EVA licensing.

NOTE: EVA4100 SAN Starter Kit include a 2C1D configuration, plus 8- FC HDDs (in either 146GB 15K or 300GB 10K capacities), and Command View EVA software, up to 4TBs of Command View EVA licensing, 1 HP StorageWorks 4/8 Base SAN Switch, 8 4Gbs SFPs, 4 Storage Works LC/LC 15m Cables, 4 Storage Works LC/LC 2m Cables, 4 HP StorageWorks FC2142 4Gb PCI-e HBA's, and Emulex's EZPilot software.

NOTE: EVA4100 Starter Kit for HP BladeSystems includes a 2C1D configuration, Command View software, and up to 4TB's of Command View EVA licensing.

Step 1 - Choose an EVA Model

Base and Factory-Integration Information

EVA4100 Starter Kit with 146GB 15K HDD's	EVA4100 Starter Kit is available with a 1 year 9x5 next day business day warranty and bundled hardware and software solution. Includes one 4U Controller assembly with two HSV200-B controllers with redundant power supplies, one M5314CB 3U Dual-redundant FC loop 14-bay disk enclosure & appropriate mounting rails, XCS 6.110 firmware, 8x 146 GB 15K rpm HDDs, Command View EVA software and 4x1 TB Command View licenses, for licensing up to 4TBs, and Starter Kit media including Command View EVA and Emulex EZPilot, HP MPIO DSM, and HP VDS, factory integrated. This solution can scale up to 28TBs. NOTE: This offering is supported for factory integration and is available worldwide. Field installation is available for Asia Pacific only. In EMEA, this kit includes Installation and Startup Services	AH051C
EVA4100 Starter Kit with 146GB 15K HDD's and Field Installation	EVA4100 Starter Kit is available with a 1 year 9x5 next day business day warranty and bundled hardware and software solution. Includes one 4U Controller assembly with two HSV200-B controllers with redundant power supplies, one M5314C 3U Dual-redundant FC loop 14-bay disk enclosure & appropriate mounting rails, XCS 6.110 firmware, 8x 146 GB 15K rpm HDDs, Command View EVA software and 4x1 TB Command View licenses, for licensing up to 4TBs, and Starter Kit media including Command View EVA and Emulex EZPilot, HP MPIO DSM, and HP VDS, field integrated. This solution can scale up to 28TBs.	AH051D
EVA4100 SAN Starter Kit with 146GB 15K HDD's	EVA4100 SAN Starter Kit is available with a 1 year 9x5 next day business day warranty and bundled hardware and software solution. Includes one 4U Controller assembly with two HSV200-B controllers with redundant power supplies, one M5314C 3U Dual-redundant FC loop 14-bay disk enclosure & appropriate mounting rails, XCS 6.110 firmware, 8x 146 GB 15K rpm HDDs, Command View EVA software and 4x1 TB Command View licenses, for licensing up to 4TBs, factory integrated. This solution can scale up to 28TBs. Also includes 1x HP StorageWorks 4/8 Base SAN switch, 8x 4Gbs SFPs, 4x Storage Works LC/LC 15m Cables, 4x Storage Works LC/LC 2m Cables, 4x HP StorageWorks FC2142 4Gb PCI-e HBA's, and Starter Kit media including Command View EVA and Emulex EZPilot, HP MPIO DSM, and HP VDS. NOTE: This offering is supported for factory integration in the Americas and in Asia Pacific. Field installation is available for Asia Pacific only. NOTE: This SKU is unavailable in EMEA.	AH052B
EVA4100-A Starter Kit with 300GB 10K HDDs	EVA4100 Starter Kit is available with a 1 year 9x5 next day business day warranty and bundled hardware and software solution. Includes one 4U Controller assembly with two HSV200-B controllers with redundant power supplies, one M5314C 3U Dual-redundant FC loop 14-bay disk enclosure & appropriate mounting rails, XCS 6.110 firmware, 8x 300 GB 10K rpm HDDs, Command View EVA software and 4x1 TB Command View licenses, for licensing up to 4TBs, and Starter Kit media including Command View EVA and Emulex EZPilot, HP MPIO DSM, and HP VDS, factory integrated. This solution can scale up to 28TBs. NOTE: This offering is supported for factory integration and is available worldwide. Field installation is available for Asia Pacific only. This offering is supported for factory integration and is available worldwide. Field installation is available for Asia Pacific only. In EMEA, this kit includes Installation and Startup Services.	AG718B
EVA4100 SAN Starter Kit with 300GB 10K drives	EVA4100 SAN Starter Kit is available with a 1 year 9x5 next day business day warranty and bundled hardware and software solution. Includes one 4U Controller assembly with two HSV200-B controllers with redundant power supplies, one M5314C 3U	AG719B

	Dual-redundant FC loop 14-bay disk enclosure & appropriate mounting rails, XCS 6.110 firmware, 8x 300 GB 10K rpm HDDs, Command View EVA software and 4x1 TB Command View licenses, for licensing up to 4TBs, factory integrated. This solution can scale up to 28TBs. Also includes 1x HP StorageWorks 4/8 Base SAN switch, 8x 4Gbs SFPs, 4x Storage Works LC/LC 15m Cables, 4x Storage Works LC/LC 2m Cables, 4x HP StorageWorks FC2142 4Gb PCI-e HBA's, and Starter Kit media including Command View EVA and Emulex EZPilot, HP MPIO DSM, and HP VDS. NOTE: This offering is supported for factory integration in the Americas and in Asia Pacific. Field installation is available for Asia Pacific only. NOTE: This SKU is unavailable in EMEA.	
EVA4100 Starter Kit for HP BladeSystems	EVA4100 Starter Kit for HP BladeSystems is available with a 1 year 9x5 next day business day warranty and bundled hardware and software solution. Includes one 4U Controller assembly with two HSV200-B controllers with redundant power supplies, one M5314C 3U Dual-redundant FC loop 14-bay disk enclosure & appropriate mounting rails, and XCS 6.110 firmware. Command View EVA software and 4x1 TB Command View licenses, for licensing up to 4TBs, factory integrated. This solution can scale up to 28TBs. The EVA4100 Starter Kit for HP BladeSystems, does not come with hard disk drives. For this reason, at least 8 EVA HDDS must be ordered with the EVA4100 Starter Kit for HP BladeSystems. NOTE: This offering is supported for factory integration and is available worldwide. Field installation is available for Asia Pacific only. This SKU is not available in EMEA.	AG904A
EVA4100 Starter Kit for HP BladeSystems Field Installed	EVA4100 Starter Kit for HP BladeSystems is available with a 1 year 9x5 next day business day warranty and bundled hardware and software solution. Includes one 4U Controller assembly with two HSV200-B controllers with redundant power supplies, one M5314CB 3U Dual-redundant FC loop 14-bay disk enclosure & appropriate mounting rails, and XCS 6.110 firmware. Command View EVA software and 4x1 TB Command View licenses, for licensing up to 4TBs. The EVA4100 Starter Kit for HP BladeSystems does not come with hard disk drives. For this reason, at least 8 EVA hard disk drives must be ordered with this Starter Kit. This kit is field integrated. NOTE: This SKU is not available in EMEA.	AG903A

Models

Enterprise Virtual Array 4100/6100/8100 Independent Bundles	The following models are available worldwide - each includes HW, varied storage capability, and Foundation Service Solution Warranty of 2 years 24 x 7 4-hour remote response, Installation and Startup service, 2 years of Virtual Controller Software (XCS) phone-in support and updates, and automated event notification and remote problem intervention. Factory Integration is required for all factory built models. The EVA4100/6100/8100 Models are modular and scalable storage solutions designed to have no-single-point-of-failure, which provide disaster tolerance and business continuance support for storage consolidation on heterogeneous SANs.	
EVA4100 2C1D Model Independent Bundle	Includes one 4U Controller assembly with two HSV200-B controllers, one M5314C 3U 14-bay disk drive enclosure, cables, and appropriate mounting hardware. NOTE: A rack must be ordered with this selection. Additional M5314C disk drive enclosures may be added to a maximum of four disk drive enclosures (up to a 2C4D). Multiple EVA4100s can be configured in a single cabinet.	AD554C
EVA6100 2C4D Model Independent Bundle	Includes one 4U Controller assembly with two HSV200-B controllers, four M5314C 3U 14-bay disk drive enclosures, a dual loop switch option, cables, and appropriate mounting hardware. NOTE: A rack must be ordered with this selection.	AD556C

	Additional M5314C disk drive enclosures may be added to a maximum of four disk drive enclosures (up to a 2C8D). Multiple EVA6100s can be configured in a single cabinet.	
EVA8100 2C2D - without loop switches	A 4U controller assembly with two HSV210-B controllers and two M5314C 3U dual-redundant FC Loop 14-bay disk enclosures. It can be Factory Configured with additional drive enclosures. For configurations with more than four Drive enclosures the FC loop switches must be included. It can also be field upgraded up to a 2C12D configuration with the addition of drive enclosures and FC loop switches. With the addition of another rack the EVA8100 can support up to 2C18D. NOTE: A rack must be ordered with this selection. Multiple EVA8100s can be configured in a single cabinet.	AG700A
EVA8100 2C2D Multiple Product Racking- without loop switches	A 4U controller assembly with two HSV210-B controllers and two M5314C 3U dual-redundant FC Loop 14-bay disk enclosures. This configuration supports factory racking of multiple products (such as servers and storage back-up) in the same rack with the EVA. It can be Factory Configured with additional drive enclosures. For configurations with more than four Drive enclosures the FC loop switches must be included. It can also be field upgraded up to a 2C12D configuration with the addition of drive enclosures and FC loop switches. With the addition of another rack the EVA8100 can support up to 2C18D. NOTE: A rack must be ordered with this selection. Multiple EVA8100s can be configured in a single cabinet.	AJ691A
EVA8100 2C6D -with loop switches	A 4U controller assembly with two HSV210-B controllers, six M5314C 3U dual-redundant FC Loop 14-bay disk enclosures, and four 12-port FC loop switches. It can be Factory Configured with additional drive enclosures. It can also be field upgraded up to a 2C12D configuration with the addition of drive enclosures. With the addition of another rack the EVA8100 can support up to 2C18D. NOTE: A rack must be ordered with this selection.	AG701A
EVA8100 2C6D Multiple Product Racking	A 4U controller assembly with two HSV210-B controllers, six M5314C 3U dual-redundant FC Loop 14-bay disk enclosures, and four 12-port FC loop switches. This configuration supports factory racking of multiple products (such as servers and storage back-up) in the same rack with the EVA. It can be Factory Configured with additional drive enclosures. It can also be field upgraded up to a 2C12D configuration with the addition of drive enclosures. With the addition of another rack the EVA8100 can support up to 2C18D. NOTE: A rack must be ordered with this selection.	AJ692A
EVA8100 2C12D - with loop switches	A 4U controller assembly with two HSV210-B controllers, twelve M5314C 3U dual-redundant FC Loop 14-bay disk enclosures, and four 12-port FC loop switches. With the addition of another rack the EVA8100 can support up to 2C18D. NOTE: A rack must be ordered with this selection.	AG702A

Enterprise Virtual Array Field Installation	Please refer to the Expansion options (Step 8) - listed in the Configuration Information and Configuration Rules - for details on components available for field installation. These components are useful for adding EVA components to existing EVA storage configurations or into on-site customer-supplied racks.

Step 2 - Choose File Services and EVA Connectivity Options

The EVA File Services and EVA iSCSI connectivity options provides superior storage consolidation, management and total cost of ownership. The EVA File Services support both block and file data concurrently with high availability and scalable performance. The EVA iSCSI connectivity options extends the FC SAN investment with integrated multi-protocol support, allowing customers to incorporate iSCSI servers without requiring additional storage arrays or management costs

Configuration Information and Configuration Rules

Ordering an EVA-File Server or iSCSI connectivity options is easy. The EVA File Services and iSCSI connectivity options will be factory integrated into the EVA4100 Starter and EVA4100 SAN Starter Kits or the standard EVA4100, EVA6100 or EVA8100 configurations.
The EVA File Services Option is available in two file serving protocols, NFS (Linux) or CIFS (Windows).

HP EVA for Windows File Services Factory Integration	Includes, two HP DL380G5-WSS Clustered Gateway nodes, one J4900BZ HP Procurve Ethernet 2626 switch, two A7984A HP StorageWorks 4/8 Base SAN switches, sixteen A7446B HP 4Gb Short Wave Transceivers, Ethernet interconnect cables between the internal modules, FC interconnect cables between the internal modules, power cords for all modules, and mounting hardware for all modules. Factory Integrated hardware, Installation and Startup. NOTE: Requires the purchase of an EVA4100/6100/8100 on the same order. One EVA- File Services can support multiple EVA arrays.	AG686A
NSF File Services		
HP EVA for Linux File Services	Includes, two HP DL380G5-SL Clustered Gateway nodes, one J4900BZ HP Procurve Ethernet 2626 switch, two A7984A HP StorageWorks 4/8 Base SAN switches, sixteen A7446B HP 4Gb Short Wave Transceivers, Ethernet interconnect cables between the internal modules, FC interconnect cables between the internal modules, power cords for all modules, and mounting hardware for all modules. Factory Integrated hardware, Installation and Startup. NOTE: Requires the purchase of an EVA4100/6100/8100 on the same order. One EVA- File Services can support multiple EVA arrays.	AG687A

The EVA iSCSI connectivity options supports Windows and Linux environments.

The EVA file services and EVA iSCSI offerings provide superior storage consolidation, management and total cost of ownership. The EVA file services offerings support both block and file data concurrently with high availability and scalable performance. The HP StorageWorks MPX200 Multifunction Router and EVA iSCSI Connectivity Option extends the FC SAN investment with integrated multi-protocol support, allowing customers to incorporate iSCSI servers without requiring additional storage arrays or management costs

For information on ordering file services components see:
http://h18000.www1.hp.com/products/quickspecs/12667_div/12667_div.html
http://h18006.www1.hp.com/products/storageworks

HP StorageWorks MPX200 Multifunction Router	HP StorageWorks MPX200 Multifunction Router 1 GbE Base Chassis Includes: • (1) chassis, • (1) 1 GbE blade, • rail kit, • accessory kit and • documentation. • Includes redundant power supplies.	AP771A
	HP Storage Works MPX200 Multifunction Router 1 GbE Upgrade Blade. Includes: • (1) 1 GbE blade • accessory kit • documentation	AP772A

For multi-path (redundant blade for high availability) order both part numbers. The

	second hardware blade installs into the chassis that is included with AP771A or AP773A. NOTE: HP recommends use of the same blade option type (1 GbE or 10 - 1GbE) in a common chassis to ensure balanced performance in a redundant configuration.	
	HP StorageWorks MPX200 Multifunction Router 10 - 1 GbE Base Chassis Includes: • (1) chassis • (1) 10 - 1 GbE blade • rail kit • accessory kit • documentation. • Includes redundant power supplies.	AP773A
	HP Storage Works MPX200 Multifunction Router 10 - 1 GbE Upgrade Blade. Includes: • (1) 10 - 1 GbE blade • accessory kit • documentation	AP774A
	For multi-path (redundant blade for high availability) order both part numbers. The second hardware blade installs into the chassis that is included with AP773A or AP771A. NOTE: HP recommends use of the same blade option type (1 GbE or 10 - 1GbE) in a common chassis to ensure balanced performance in a redundant configuration.	
HP StorageWorks iSCSI Connectivity Option	HP StorageWorks EVA iSCSI Connectivity Option Order this part for all new installations. Includes One unit, shelf, brackets, copper FC cables and documentation.	AE324A
	Includes one unit to mount in existing shelf and documentation HP StorageWorks EVA iSCSI Connectivity Upgrade Option For multi-path (dual unit high availability) order both part numbers. (The second hardware unit installs into the shelf that ships with AE324A.) NOTE: For more information on the iSCSI Connectivity Options: http://h18006.www1.hp.com/products/storageworks/evaiscsiconnect/index.html	AE325A
HP StorageWorks IP Distance Gateway SAN over WAN connectivity, enables EVA Continuous Access replication over WAN (Asynchronous and Synchronous)	HP StorageWorks IP Distance Gateway Order this part for all new installations. Includes One unit, shelf, brackets and documentation.	AG680A
	HP StorageWorks IP Distance Gateway Includes One unit to mount in existing shelf and documentation For multi-path (dual unit high availability) order both part numbers. This second hardware unit installs into the shelf that ships with AG680A. NOTE: For more information on the IP Distance Gateway: http://h18006.www1.hp.com/storage/disk_storage/index.html	AG681A

Step 3 - Choose a Rack - Base and Factory Integration Information

Factory Integration

Start your order by choosing a rack to house your EVA4100/6100/8100 based on the HP 10000 G2 Series Rack.

NOTE: The 10000 G2 Series Rack is the only series supported for factory configuration.

NOTE: When choosing an EVA configuration, start with an EVA configuration "equal to" or "closest but smaller" than the desired final configuration. Factory configuration rules will not allow a unit to be built up past the starting point for another standard configuration. (For example for an EVA6100 2C6D choose an EVA6100 2C4D plus 2 M5314C; not an EVA4100 2C1D plus 5 M5314C enclosures and FC Dual loop switch.) Orders that do not follow these conventions will be unable to be processed.

Primary Configuration Rules

Use of the EVA Factory Integration part number is required for component integration. The EVA4100 Starter Kits, EVA4100/6100/8100 will be configured into a 42U HP 10000 G2 Series Rack with the appropriate PDU. If other products such as servers or back-up products are included in the cab a different PDU will be added (if required) or can be chosen from a list of appropriate offerings shown in the configuration tool.

EVA8100 2C2D and 2C6D purchased without additional servers or products will be racked in the center of the rack. When these configurations are purchased with servers or other components the EVA will be racked from the bottom up. If a customer has a specific racking requirement they should use the Factory Express option to define the configuration.

HP 10000 G2 Series Rack must be purchased. Additional EVA4100 Starter Kits, EVA4100/6100/8100 bundles and drive enclosures may be ordered for multiple subsystem integration at the factory. Additional cabs are required to house configurations beyond the U-space of the initial cabinet. Ballast and stabilizers will be offered through the configurator tools for use when required.

The EVA4100/6100 and EVA8100 controller pair assemblies are only available for field installation and should be chosen when field installation is required. HP Global Services will perform the on-site installation when an EVA4100/6100 or EVA8100 controller pair assembly is ordered.

The 5642 (42U) Rack Cabinet System is supported for field installation. This racks may be purchased along with EVA component pieces for assembly in the field. The HP 5642 rack system is an entry level rack with sufficient features for easy access and ease of use.

When calculating available U-space, assume that no space will be placed between the mounted components. For redundancy, order PDUs in quantities of two. Refer to the Configuration and User Guide in the Information Library at the Rack Solutions webpage.

HP 10000 Series G2 Racks

NOTE: The number of subsystems varies and is determined by the interior U-space of the cab.	AE324A
HP Rack 10642 G2 Shock (42U)	AF002A
HP Rack 10642 G2 w/Extn Shock (42U)	AF004A
HP Rack 10636 G2 Shock (36U)	AF012A
HP Rack 10636 G2 w/Extn Shock (36U)	AF014A
HP Rack 10622 G2 Shock (22U)	AF021A

	HP Rack 10636 G2 Modular Cooling System (MCS) Shock (42U)	AF098A
	For PDUs and cabinet accessories see: http://h18004.www1.hp.com/products/servers/proliantstorage/racks/10000g2series.html	
HP Rack 5642 System for Field Installation only	5642 (42U) Rack Cabinet System	358254-B21
	For additional cabinet accessories see: http://h18004.www1.hp.com/products/quickspecs/12074_div/12074_div.html	
Field Installation	Please refer to the Expansion options (Step 8) - listed in the Configuration Information and Configuration Rules - for details on components available for field installation. These components are useful for adding EVA4x00/6x00/8x00 components to existing EVA4x00/6x00/8x00 storage configurations or into on-site customer-supplied racks.	
Non-HP rack and power requirements	For detailed information on determining compatibility of a non-HP rack, please review the information included in the EVA User Guide which can be found at http://www.hp.com/go/eva. NOTE: Also refer to Step 8 for ordering instructions and components that accommodate on-site installation of EVA4100/6100/8100 subsystems into customer-supplied racks.	
HP ProLiant Storage Servers and supported Fibre Channel HBAs	Select HP ProLiant Storage Servers (plus a Fibre Channel HBA) add file and print services to an EVA or Fibre Channel SAN. ProLiant DL380 G5 x64 SAN Storage Server and DL585 G2 Storage Server gateways each feature Microsoft's Windows Unified Data Storage Server 2003 operating system that also includes Microsoft iSCSI Software Target and a cluster license standard (Microsoft iSCSI Software Target is optional for other DL380 G5 Storage Server models). In addition, any ProLiant DL380 G5 Storage Server or DL585 G2 Storage Server is a perfect platform from which to run Command View EVA. You stretch your investment even further when you host EVA management, file and print services, and iSCSI connectivity all from the same ProLiant Storage Server gateway solution.	
	HP ProLiant DL380 G5 Base Storage Server NOTE: Microsoft Windows Storage Server 2003 R2 Standard x64 Edition O/S	AG815A
	HP ProLiant DL380 G5 1.16TB SAS Storage Server NOTE: Microsoft Windows Storage Server 2003 R2 Standard x64 Edition O/S	AG816A
	HP ProLiant DL380 G5 x64 SAN Storage Server NOTE: Microsoft Windows Unified Data Storage Server 2003 Enterprise x64 Edition O/S	AG771A
	HP ProLiant DL585 G2 Storage Server NOTE: Microsoft Windows Unified Data Storage Server 2003 Enterprise x64 Edition O/S	AG630A
	HP StorageWorks FC2142SR 4Gb PCIe HBA	A8002A
	HP StorageWorks FC2242SR Dual Channel 4 Gb PCIe HBA	A8003A
	HP StorageWorks FC1142SR 4Gb PCIe HBA	AE311A
	HP StorageWorks FC1242SR Dual Channel 4 Gb PCIe HBA	AE312A

Step 4 - Firmware

Controller Firmware

HP StorageWorks EVA4100/6100/8100 is factory installed with XCS v6.110. Separate Media kits and licenses are required to support HP Continuous Access EVA and HP Business Copy.

XCS V6.110 supports all 2 and 4Gb EVA4x00/6x00/8x00 models.

HP StorageWorks EVA4x00/6x00/8x00 XCS v6.110 controller media download is available from HP.com. These downloads are available for upgrades of existing 2 and 4Gb EVA4000/6000/8000s and as archival media for the EVA4100/6100/8100. The EVA Release Notes and Upgrading Product software Guide are also available from the same location.

XCS V6.110 is available for download at the "software & drivers" link: http://h18006.www1.hp.com/products/storageworks/eva/index.html

HP Command View EVA V7.0 or above is mandatory to support the new features in XCS V6.110. An HP Command View License-to-Use (LTU) must be purchased for each EVA controller pair. Each HP EVA must be licensed with the appropriate HP Command View LTU(s) to be in compliance with the End User License Agreement (EULA) and the Command View license monitoring function.

The Command View licensed capacity per EVA must be equal to, or greater than the total raw capacity of each EVA. HP Command View EVA may be purchased in increments of a 1TB LTU (one or multiple 1TB LTUs based upon the EVA's raw capacity), or an HP Command View Unlimited Capacity LTU may be purchased which will support up to the maximum raw storage capacity of the EVA.

OPTIONAL SOFTWARE: EVA4100/6100/8100 optional software can be found at the following URL: http://h18006.www1.hp.com/storage/software.html

NOTE: EVA4100 Starter Kits include Command View EVA software and licensing up to 4TBs.
NOTE: The HP StorageWorks EVA4x00/6x00/8x00 controller media kit is no longer a required purchase with a new EVA or available for sale. XCS upgrades are available as downloads from HP.com.

Step 5 - Hard Disk Drives

Drives are orderable two ways - either with the purchase of an array, or as add-on drives for arrays already installed. There are different product numbers for Upgrade drives than Initial-installation drives

HP StorageWorks FC Drives - Factory installation	NOTE: Four (4) disk drives, either size/type, are required per disk enclosure per system. A minimum of eight (8) disk drives are required per EVA4100/6100/8100. NOTE: EVA4100 Starter Kits ship standards with 8 drives; you can select any EVA supported drive as additional add-on capacity beyond the original 8 drive EVA4100 Starter Kit configuration.	Not for use in EMEA	EMEA Only
	300 GB 10K rpm dual-port 2 Gb/s FC-AL 1-inch (2.54 cm) drive	364622-B23*	364622-B22*
	HP StorageWorks EVA 450GB 10K Fibre Channel Hard Disk Drive	AP729B*	AP729A*
	HP StorageWorks EVA 600GB 10K Fibre Channel Hard Disk Drive	AP730B*	AP730A*
	146 GB 15K rpm dual-port 2/4 Gb/s FC-AL 1-inch (2.54 cm) drive	364621-B23*	364621-B22*
	300 GB 15K rpm dual-port 2/4 Gb/s FC-AL 1-inch (2.54 cm) drive	AG425B*	AG425A*
	450 GB 15K rpm dual-port 2/4 Gb/s FC-AL 1-inch (2.54 cm) drive	AG804B*	AG804A*
HP StorageWorks FATA Drives - Factory installation	1TB FATA disk dual-port 2 Gb FC Hybrid disk drive factory integrated	AG883B*	AG883A*
	*0D1 will appear after this part number on your sales order indicating factory integration		
	NOTE: There is a minimum order requirement, with the first installation of FATA add-on drives on an EVA, a minimum of 8 FATA drives are required to create the new NearOnline disk group. NOTE: XCS V6.110 supports the 1TB FATA. It has virtual device mapping (addressable capacity) limits of 80/80/200TB (EVA4000 & EVA4100/EVA6000 & EVA6100/EV8000 & EVA8100 respectively) . Calculation of virtual device capacity includes all created virtual disks plus the mapped capacity of all snapshot, snapclone and mirrorclones on the array. The potential to reach the limits vary with the usage of the array. When installing a significant number of the 1TB FATA drives into an array contact your sales or service representative to discuss your configuration requirements. Expansion of the virtual device mapping limits will occur in Mid 2008.		

Step 6 - Cables

FC cable - Copper SFP	The following cables are used with the M5314 and M5314A drive enclosure but are not necessary for new installations. These cables are for use inside the cab between the controllers and drive enclosures if replacement cables are required.	
	Cable FC Copper SFP .6m	321624-B21
	Cable FC Copper SFP 2m	324394-B21

Configuration Information and Configuration Rules

4Gb Upgrade Cable Kit	The following cable kit is for use in upgrading the cables between the switches and the M5314B enclosures for older EVAs to the 4Gb EVA4000/6000/8000 and EVA4100/6100/8100.	
	HP StorageWorks 4Gb Cable Kit	AG311A
FC Loop Switch Kits	This option is mandatory when upgrading the EVA4x00 2C1D to and EVA6x00 with 5 shelves or higher. Addition of loop switches to an EVA4000 or EVA4100 creates an EVA6x00 and must be licensed as an EVA6x00.	
	HP EVA- Dual Loop Switch Option Contains two FC loop switches, mounting hardware and cables. NOTE: This kit is mandatory when upgrading the 4Gb EVA4000-A or EVA4100. Addition of 5 shelves or more requires a Dual Loop Switch kit. Addition of the loop switch to an EVA4000 or EVA4100 (1 or more shelves) creates an EVA6x00. 3U spare space is required to install the FC Loop Switch Kit.	AD557B
	The EVA8000-A or EVA8100 2C2D customers have the option to convert to a 2C6D - or 2C12 with the installation, by trained Service Engineers, of the FC Loop Switch Option. This option is mandatory when upgrading the 2C2D to 5 shelves or higher.	
	EVA8000-A FC Loop Switch Option Contains four FC loop switches, mounting hardware and cables. NOTE: This kit is mandatory when upgrading the 4Gb EVA8000-A or EVA 8100 2C2D to 5 shelves or higher.3U spare space is required to install the FC Loop Switch Kit.	AD553B
2 Gb/s SFP (Small Form- Factor Profile) Transceiver	2 Gb/s SFP Fibre Channel Transceiver Kit NOTE: Used on 2Gb switches with SFP Ports.	221470-B21
HP StorageWorks EVA Loopback Connector	HP StorageWorks EVA Loopback Connector Contains one Loopback connector. The loopback connector is used when an EVA host port is not cabled to a switch or HBA (for direct connect). NOTE: All EVA host ports must be filled with either a cable or loopback connector.	AJ706A
4 Gb/s SFP (Small Form- Factor Profile) Transceiver	4 Gb/s SFP Fibre Channel Transceiver Kit NOTE: Used on 4Gb switches with SFP Ports.	A7446B
FC cable - 1 Gb to 2 Gb/s (optional) (LC to SC)	NOTE: Before selecting the FC cables to connect between the controllers and the switches, check to see what kind of connectors are on the switches that will be connected to the controllers. New switches utilize a Small Form-Factor Profile (SFP) connector. The SFP connector can support 2Gb I/Os and/or 1Gb I/Os, but the device connected to it may not currently be enabled for 2Gb. The SFP connector is also referred to as an LC connector. The older large form factor 1Gb connector is also referred to as an SC connecter.	
	NOTE: The 2Gb SFPs on the ports of the EVA4000 HSV100 and EVA6000 HSV200 controllers are a smaller form factor than 1Gb SFPs. One of these cables (either LC to SC or LC to LC) is required per FC port of each HSV controller.	
	FC Short Wave 2-Meter Cable, LC/SC (1Gb to 2Gb)	221691-B21
	FC Short Wave 5-Meter Cable, LC/SC (1Gb to 2Gb)	221691-B22
	FC Short Wave 15-Meter Cable, LC/SC (1Gb to 2Gb)	221691-B23
	FC Short Wave 30-Meter Cable, LC/SC (1Gb to 2Gb)	221691-B26
	FC Short Wave 50-Meter Cable, LC/SC (1Gb to 2Gb)	221691-B27
FC cable - 2Gb/s to 2Gb/s (optional)(LC to LC)	NOTE: SFP - Small Form-Factor Profile on the ports of the EVA4x00/6x00/8x00. One of these cables (LC to LC) is required per FC port of each HSV controller.	
	2-meter LC-LC Multi-Mode Fibre Cable	221692-B21

5-meter LC-LC Multi-Mode Fibre Cable	221692-B22
15-meter LC-LC Multi-Mode Fibre Cable	221692-B23
30-meter LC-LC Multi-Mode Fibre Cable	221692-B26
50-meter LC-LC Multi-Mode Fibre Cable	221692-B27

Step 7 - Management and High Availability Software

EVA Storage Management / User Interface

NOTE: Command View is included with the EVA4100 Starter Kits, EVA4100/6100/8100 with XCS v6.110, running on either a management server or application host running Microsoft Windows or the HP OpenView Storage Management Appliance is required per SAN fabric containing an Enterprise Virtual Array.

An HP Command View License-to-Use (LTU) must be purchased for each EVA controller pair. Each HP EVA must be licensed with the appropriate HP Command View LTU(s) to be in compliance with the End User License Agreement (EULA). The licensed capacity per EVA must be equal to, or greater than the total raw capacity of each EVA. HP Command View EVA may be purchased in increments of a 1TB LTU (one or multiple 1TB LTUs based upon the raw capacity), or an HP Command View Unlimited Capacity LTU may be purchased which will support up to the maximum raw storage capacity of the EVA.

See the HP StorageWorks Command View EVA QuickSpecs for detailed licensing, support and configuration information:
http://h18006.www1.hp.com/products/storage/software/cmdvieweva/index.html

Storage Management Appliance

The HP OpenView Storage Management Appliance is a combined hardware and software solution that provides a centralized point for configuration, management and monitoring of storage elements, including switches and storage devices, while simplifying management tasks and reducing cost. It offers a comprehensive and cost-effective configuration, monitoring and storage management solution for the multiple platform SAN. Designed to connect directly to a SAN fabric, the Storage Management Appliance is a host-independent system that performs management functions without requiring host computers.

Windows based management server

HP StorageWorks Command View EVA v6.0 and above supports installation on a server running Microsoft Windows.

High Availability Software

Industry popular multiple path software is supported on the EVA4100 Starter Kits, EVA4100/6100/8100. This software is used to manage multiple paths between hosts and storage systems. It enables high availability through path management and I/O load balancing. Multiple Path support is available for the following Operating Systems:

- HP-UX – HP Secure Path v3.0F SP1, pvlinks native in HP-UX and Veritas DMP
- Windows – Full featured MPIO, available from HP
- Linux – QLogic Failover driver, available from QLogic /HP
- Tru64 – native in OS
- OpenVMS – native in OS
- AIX – MPIO native in OS
- Solaris – MPxIO native in OS, Veritas DMP available from Veritas
- NetWare – MPIO native in OS
- VMware – MPIO native in OS
- Apple Mac – OS X – ATTO Fibre Channel driver available from ATTO/HP

Refer to: http://h18006.www1.hp.com/products/storage/software/multipathoptions/index.html

Step 8 - Expansion Options

The EVA4100/6100 and EVA8100 Controller Pair assembly is for on-site installation into existing EVA configurations (or qualified rack systems) by HP Global Services. The physical configuration services for the EVA Controller Pair and up to four M5314C FC drive enclosures, as well as installation and startup services, are included when you purchase the controller pair assembly component.

Optional Controllers and Accessories	EVA4100/6100 Controller Pair assembly Solution: One 4U Controller assembly with two HSV200-B controllers, mounting hardware, cables, 2 years 24 x 7 4-hour remote response, controller mounting, Installation and Startup service, 2 years of EVA4100/6100/8100 controller software (XCS) phone-in support and updates, automated event notification and remote problem intervention, included with this component. NOTE: Not required for EVA4100 Starter Kits (includes an EVA4100 2C1D). NOTE: Addition of a dual FC Loop Switch Kit to the EVA4100/6100 Controller Assembly Pair creates an EVA6100.	AD525C
	EVA8100 Controller Pair assembly Solution: One 4U Controller assembly with two HSV210-B controllers, mounting hardware, cables, 2 years 24 x 7 4-hour remote response, controller mounting, Installation and Startup service, 2 years of EVA4100/6100/8100 controller software (XCS) phone-in support and updates, automated event notification and remote problem intervention, included with this component.	AD524C
M5314B FC Drive Enclosures & Accessories	Select M5314B drive enclosures to expand EVA configurations: Drive enclosures may be: 1. Ordered for on-site capacity additions to existing EVA3000/5000/4000/6000/8000 configurations. 2. Compatible with all EVAs (EVA3000/5000/4000/6000/8000/4000-A/6000-A/8000-A arrays) Up to four drive enclosures are supported with each pair of HSV200 controllers (EVA4000, EVA4000 Starter Kits, EVA4000/6000 Controller Assembly Pair) without a loop switch. An HSV200 controller supports 1to 8 M5314B Drive Enclosures with 2 loop switches. NOTE: Addition of the loop switch pair to an HSV200B controller pair (with 1 to 8 drive enclosures) creates an EVA6000. Up to 18 drive enclosures are supported with each pair of HSV210 or HSV210-A (EVA8000) with 4 loop switches. M5314B FC Drive Enclosure The M5314B is a 3U dual-redundant FC Loop 14-bay disk enclosure with mounting hardware, and the necessary copper FC cables for connecting to an HSV200 or HSV200-A Controller pair. NOTE: Minimum of 8 disk drives, of any size, are required per Fibre Channel or FATA drive types	AD542B*
M5314C FC Drive Enclosures & Accessories	Select M5314C drive enclosures to expand EVA4100/6100/8100 configurations: Drive enclosures may be: 1. Ordered for on-site capacity additions to existing EVA4100/6100/8100	AD542C*

configurations.

2. Ordered for field installation of complete EVA4100/6100/8100 configurations in conjunction with the EVA4100 Starter Kits (AP only), EVA4100/6100 or EVA8100 controller pair assembly into the supported HP cabinets and racks described in Step 8 or into qualified 3rd party rack systems by HP Global Services.
3. Installed by HP manufacturing into EVA configurations by ordering the enclosure with the factory integration part number.

Compatible with EVAs (EVA4100/6100/8100 arrays only). Without a loop switch pair, up to four drive enclosures are supported with each pair of HSV200B controllers (EVA4100, EVA4100 Starter Kits, EVA4100/6100 Controller Assembly). An HSV200B controller with a loop switch pair supports 1to 8 M5314C Drive Enclosures.

NOTE: Addition of the loop switch pair to an HSV200B controller pair (with 1 to 8 drive enclosures) creates an EVA6100.

Up to 18 drive enclosures are supported with each pair of HSV210B (EVA8000) with 4 loop switches.

M5314C FC Drive Enclosure
The M5314C is a 3U dual-redundant FC Loop 14-bay disk enclosure with mounting hardware, and the necessary copper FC cables for connecting to an HSV200B and HSV210B Controller pair.
NOTE: Minimum of 8 disk drives, of any size, are required per Fibre Channel or FATA drive types
*0D1 will appear after this part number on your sales order when factory integration is indicated.

Dual FC Loop Switch Option

The EVA Dual FC Loop Switch Option must be field installed to an EVA4x00 when upgrading to an EVA6100. The EVA8x00 FC Loop Switch Option is used when upgrading and EVA8x00 2C2D beyond 4 disk enclosures

EVA Dual FC Loop Switch Option for EVA6x00 Contains two FC loop switches, mounting hardware and cables.	AD557B*
EVA8x00 FC Loop Switch Option Contains 4 FC loop switches, mounting hardware and cables	AD553B*

Enterprise Virtual Array Racking for Expansion

The EVA customers have the option to mount supported devices in the rack used for EVA8x00 expansion.

EVA 42U HP 10000 G2 Series Rack Power requirements vary based on the equipment to be placed in the rack and the country power supply. Options are:	AF002A
HP PDU Pivot Kit Used when expanding an existing EVA8x00 to 2C12D. It may also be used to reclaim 2U of space in a 10000 G2 Series Rack with other EVA configurations. EVA8000 2C12D configured in the factory include the PDU Pivot kit as part of the standard configuration.	AG730A
Modular PDU 24A Low Volt, NA/JPN	252663-D71 #0D2
Modular PDU 24A HV, NA/JPN	252663-D72 #0D2

Modular PDU 32A HV, INTL	252663-B31 #0D2
NOTE: #0D2 feature code designates the PDU is mounted horizontally in the bottom of the rack on real rail, above any UPS, and occupies 1U EIA space	
Low voltage PDU 252663-D71 requires additional power distraction module AF500A. (1) AF500A supports 2 PDUs	AF500A

Enterprise Virtual Array Expansion Cabinet Example Configurations for EVA5000 and EVA8000			
Expansion Cabinet Components	0C6D	0C12D	Description
AF002A	1	1	EVA 42U HP 10000 G2 Series Rack
252663-xxx	2 (minimum)	2 (minimum)	Country/component requirement specific
336881-B21	1	2	Can bus to Can bus cable
AD542B	6	12	M5314B (for EVA5000/8000 and EVA8000) FC Drive Enclosure
345580-B21	6	12	Cable Kit, Expansion Cab Drive Shelf
NOTE: The EVA Expansion cabinets examples defined above may be used with any existing EVA5000 or 2 or 4Gb EVA8000. NOTE: Installation of an expansion cabinet must be done offline.			

Enterprise Virtual Array Expansion Cabinet Example Configurations for EVA8100			
Expansion Cabinet Components	0C6D	0C12D	Description
AF002A	1	1	EVA 42U HP 10000 G2 Series Rack
252663-XXX	2 (minimum)	2 (minimum)	Country/component requirement specific
336881-B21	1	2	Can bus to Can bus cable
AD542C	6	12	M5314C FC Drive Enclosure
345580-B21	6	12	Cable Kit, Expansion Cab Drive Shelf
NOTE: The EVA Expansion cabinets examples defined above may be used with any EVA8100. NOTE: Installation of an expansion cabinet must be done offline.			

EVA4100 Upgrade	EVA6100	EVA8100	SKUs Required
EVA4100/6100 Controller Assembly Pair	No[1]	N/A	
EVA8100 Controller Assembly Pair	N/A	Yes	AD524C
EVA4000 to 6000-A FC loop Switches (kit contains 2 switches, mounting hardware and cables)	Yes	N/A	AD557B
EVA8000-A FC loop Switches (kit includes 4 switches, mounting hardware and cables)	N/A[2]	Yes[2]	AD553B
HP StorageWorks EVA4000/6000/8000 VCS v6.110	Yes	Yes	Download[6]
Command View EVA	Yes	Yes	See URL[4]
Command View Licenses[3]	Yes	Yes	See URL[4]
Business Copy EVA	Yes	Yes	See URL[4]
Business Copy Upgrade license	Yes	Yes	See URL[4]
Continuous Access EVA	Yes	Yes	See URL[4]
Continuous Access EVA Upgrade license	Yes	Yes	See URL[4]

HP Services assessment and upgrade installation	Yes	Yes	See URL[4]

NOTES:
[1]Upgrading an EVA4100 to an EVA6100 does not require a controller replacement. 2 FC loop switches must be added creating an EVA6100; which must then be licensed as an EVA6100. Command View EVA and array integrated software license (if previously installed) for Business Copy EVA, Dynamic Capacity Manager and Continuous Access EVA upgrade licenses must be purchased.
[2]The addition of the loop switches or the addition of the EVA8100 controller assembly and loop switches requires down time and would be an opportunity to upgrade firmware, hardware and software components.
[3]Proper Command View licensing requires a License To Use (LTUs) equal to, or greater than the total raw capacity of each array and may be purchased in additive increments of 1TB or Unlimited LTUs). Correct licensing should be checked when expanding an EVA4100.
[4]http://h18006.www1.hp.com/storage/software.html
[5]http://www.hp.com/hps/storage/
[6]http://h18006.www1.hp.com/products/storageworks/eva/

EVA3000/5000 Upgrade to EVA4100/6100/8100	EVA4100/6100	EVA8100	SKUs Required
EVA4100/6100 Controller Assembly Pair	Yes	N/A	AD525C
EVA8100 Controller Assembly Pair	N/A	Yes	AD524C
EVA4000 to 6000-A FC loop Switches (kit contains 2 switches, mounting hardware and cables)	Yes[7]	N/A	AD557B
EVA8000-A FC loop Switches (kit includes 4 switches, mounting hardware and cables)	N/A	Yes[7]	AD553B
HP StorageWorks 4Gb Cable Kit (use with FC Loop Switches)	Yes[1]	Yes[1]	AG311A
I/O Module A (1 per disk shelf enclosure)	Yes	Yes	AD623C
I/O Module B (1 per disk shelf enclosure)	Yes	Yes	AD624C
EMU	Yes[2]	Yes[2]	AD625B
HP StorageWorks EVA4x00/6x00/8x00 VCX v6.110	Yes	Yes	Download[6]
Command View EVA	Yes	Yes	See URL[4]
Command View Licenses[3]	Yes	Yes	See URL[4]
Business Copy EVA	Yes	Yes	See URL[4]
Business Copy license	Yes	Yes	See URL[4]
Continuous Access EVA	Yes	Yes	See URL[4]
Continuous Access EVA license	Yes	Yes	See URL[4]
Replication Solutions Manager v3.0	Yes	Yes	See URL[4]
HP Services assessment and upgrade installation	Yes	Yes	See URL[4]

NOTES:
[1]AG311A cable kit is required when the loop switch is upgraded (not required if the drive enclosures are cabled with Molex cables, check the switch-to-enclosure cables to determine). Purchase one AG311A for every two enclosure shelves. AG311A contains four 2-Meter cables. Two 2-Meter cables are required per enclosure.
[2]Check minimum hardware type on the EMUs...
Minimum...
EMU Hardware Type 2
[3]Proper Command View licensing requires a License To Use (LTUs) equal to, or greater than the total raw capacity of each array and may be purchased in additive increments of 1Tb or Unlimited LTUs)
[4]http://h18006.www1.hp.com/storage/software.html
[5]http://www.hp.com/hps/storage/
[6]http://h18006.www1.hp.com/products/storageworks/eva/
[7]Upgrading an EVA3000 or EVA5000 to an EVA6100 or EVA8100 requires a controller replacement, FC loop switches and cables (along with other hardware requirements as shown above). The upgraded EVA which must be licensed appropriately. Command

Configuration Information and Configuration Rules

View EVA and array integrated software license (if previously installed) for Business Copy EVA, Dynamic Capacity Manager and Continuous Access EVA upgrade licenses must be purchased.

NOTE: HP Services required when upgrading the EVA hardware.
NOTE: Command View, Business Copy, Dynamic Capacity Manager, Continuous Access EVA software licenses must be upgraded at the time of the hardware upgrade. Please see the appropriate product URL for upgrade license information.
NOTE: Some older EVA5000 were configured in a 41U cabinet. A fully configured EVA8100 2C12D requires 42U of space. When an EVA5000 upgrade is planned the cabinet size should be taken evaluated and if necessary an expansion rack or replacement 42U 10000 Universal rack ordered.

EVA4000/6000/8000 Upgrade to EVA4100/6100/8100	EVA4100/6100	EVA8100	SKUs Required
EVA4100/6100 Controller Assembly Pair	Yes	N/A	AD525C
EVA8100 Controller Assembly Pair	N/A	Yes	AD524C
EVA4000 to 6000-A FC loop Switches (kit contains 2 switches, mounting hardware and cables)	Yes[1]	N/A	AD557B
EVA8000-A FC loop Switches (kit includes 4 switches, mounting hardware and cables)	N/A	Yes[1]	AD553B
HP StorageWorks 4Gb Cable Kit (use with FC Loop Switches)	Yes[1]	Yes[1]	AG311A
I/O Modules	Yes	Yes	AD623C & AD624C
EMU	Yes[7]	Yes[7]	AD625B
HP StorageWorks EVA4x00/6x00/8x00 VCX v6.110	Yes	Yes	Download[5]
Online upgrade-- see HP services for configuration requirements	Yes	Yes	
Command View EVA	Yes	Yes	See URL[3]
Command View Licenses[2]	Yes	Yes	See URL[3]
Business Copy EVA	Yes	Yes	See URL[3]
Business Copy license	Yes	Yes	See URL[3]
Continuous Access EVA	Yes	Yes	See URL[3]
Continuous Access EVA license	Yes	Yes	See URL[3]
HP Services assessment and upgrade installation	Yes	Yes	See URL[4]

NOTES:
[1]If required for that configuration. Minimum switch revision 30-10022-01 required. For information on visual identification without removing the existing switch(s) see HP StorageWorks Enterprise Virtual Array User Guide. (Not required if the drive enclosures are cabled with Molex cables, (check the switch-to-enclosure cables to determine). Purchase one AG311A for every two enclosure shelves. AG311A contains four 2-Meter cables. Two 2-Meter cables are required per enclosure.
[2]Proper Command View licensing requires a License To Use (LTUs) equal to or greater than the total raw capacity of each array and may be purchased in additive increments of 1TB or Unlimited LTUs). Business Copy EVA and Continuous Access EVA upgrade licenses required if upgrading to a higher EVA model.
[3]http://h18006.www1.hp.com/storage/software.html
[4]http://www.hp.com/hps/storage/
[6] http://h18006.www1.hp.com/products/storageworks/eva/
[7]Check minimum hardware type on the EMUs...
Minimum...
EMU Hardware Type 2

NOTE: HP Services required when upgrading the EVA hardware.
NOTE: Command View EVA , Business Copy EVA, EVA Dynamic Capacity Manager, Continuous Access EVA software licenses must be upgraded at the time of the hardware upgrade. Please see the appropriate product URL for upgrade license information.

Step 9 - Optional Components and Software

Replication Management

HP Business Copy EVA and HP Continuous Access EVA comes complete with HP Replication Solutions Manager, a graphical user interface and scripting environment, that greatly simplifies storage management by creating, running, and managing storage replication jobs using controller based snapshots, clones and remote mirroring.

With HP Replication Solutions Manager users easily can manage both remote and local replication across the full EVA product family. By virtually removing the complexity associated with both small and large replication environments, point-in-time copies and remote replication are managed and configured with just a few mouse clicks. To assist the user, Information on the replication environment is presented in a variety of views, including an interactive topology manager that allows each user to select their viewing preference. In addition, HP Replication Solutions manager provides a scripting interface for additional flexibility.

Application Integration with Oracle
As an option to HP Business Copy EVA, the user can simply replicate an Oracle database. HP Replication Solutions Manager will provide a graphical interface to view the components of the database to be replicated, and allow selection of a specified database. The replication manager will automatically suspend the Oracle application, and take a point in time copy (local or remote) of all associated array virtual disks. The replication manager will provide the option to restart the original Oracle database after the replicas have been initiated on the array. The user will be able to utilize the replication manager to present the replica to another host.

Remote Replication Software

HP StorageWorks Continuous Access EVA is a controller-based application that performs real-time replication between HP StorageWorks enterprise virtual arrays. The solution is enhanced to perform remote replication, and deliver high data availability and performance to users on Fibre Channel based campus, metro or continental metro or continental Storage Area Networks (SANs).

Continuous Access EVA provides customers with the highest level of storage data protection capabilities to meet their business continuity implementation goals. Customers can achieve a competitive advantage by combining disaster-tolerant solutions and disaster-tolerant managed services into their planning and daily routines, ensuring the data's security, availability and integrity.

Continuous Access EVA delivers local copy with Snapshot XCS Controller Software and virtualization interoperability protect against disaster like scenarios, saving time and money while maintaining the flow of information across the enterprise. Continuous Access EVA is an irreplaceable component for protecting any business, yours especially.

Continuous Access EVA is sold by array type and utilized capacity. Please see the product URL for ordering information and part numbers: http://h18006.www1.hp.com/storage/software.html

Local Replication Software

HP StorageWorks Business Copy EVA is a local replication software product for the EVA family providing Snapshot and clone set-up and management. Business Copy EVA creates point-in-time copies of storage volumes, called Business Continuance Volumes (BCVs) using the snapshot and cloning capabilities of the array firmware and provides multi-array local mirror management. Additional features of the new product include licensing based on replicated (not total raw) capacity and a new improved management interface.

Business Copy EVA is sold by array type and utilized capacity. See the product URL for ordering information and part numbers: http://h18000.www1.hp.com/storage/software.html

HP StorageWorks EVA

HP StorageWorks EVA Dynamic Capacity Management Software is a comprehensive software solution

Configuration Information and Configuration Rules

Dynamic Capacity Management Software

that automates storage provisioning and improves capacity utilization on the HP StorageWorks Enterprise Virtual Array (EVA) family. Designed for the enterprise market, EVA Dynamic Capacity Management Software uses advanced automation to automatically "right-size" the file system and storage volumes to ensure the highest levels of capacity utilization are achieved while reducing ongoing storage administration needs.

For more information, visit:
http://h18006.www1.hp.com/products/storage/software/eva_dcm/index.html

Storage Resource Management Software (HP Standard Edition SRM Software)

HP Storage Essentials Standard Edition Storage Resource Management Software allows midsize businesses with limited IT staff to see the big picture thereby reducing SAN complexity. It supports Windows and Linux servers with small to medium HP storage based SANs including HP EVA, HP MSA, HP NAS, HP EML Tape, HBAs and fabric devices. HP Standard Edition SRM Software unified server and storage tool-set automates complex and manual storage process and tasks with auto discovery, visualization and topology mapping for quick device identification. HP Standard Edition SRM Software solution integrates with a rich assortment of HP software including Systems Insight Manager, HP Essentials software, and HP Storage Essentials Enterprise Edition SRM Software and advanced software plug-ins to reduce the time and money associated with deploying and managing storage infrastructure.

HP Standard Edition SRM Software is an affordable solution that optimizes SAN capacity, increases IT staff efficiency and simplifies end-to-end troubleshooting and reporting. From a single, Web-based, secure enterprise console you can configure your storage environment and monitor file system utilization to reclaim wasted space and facilitate file server availability. Now IT can obtain a holistic view of storage from an application level with Oracle, SQL, Sybase, InterSystems Cache' and Microfsoft Exchange for fast problem resolution. Centralized event and end-to-end EVA performance management with historical and future trending brings additional benefits too. With optional software plug-ins you can monitor status of the entire backup process and you have one interface for SAN and NAS management. The Standard Edition SRM Software solution simplifies ordering by including media, licensing and recommended HP Installation and HP Start Up Service to ensure the best total customer experience.

Standard Edition SRM Media and License to Use (LTU)

HP Storage Essentials Standard Edition SRM Media Kit	T5314AA
HP Storage Essentials Standard Edition SRM LTU	T5315AA

Add on Storage Essentials Suite plug-in licensing available to Standard Edition

HP Storage Essentials NAS Manager 1 TB LTU	T4294AA
HP Storage Essentials File System Viewer 1 TB LTU	T4292AA
HP Storage Essentials Database Viewer 1 MAL LTU	T4289AA
HP Storage Essentials Exchange Viewer 1 MAL LTU	T4288AA
HP Storage Essentials Backup Manager 1 TB LTU	T4295AA

NOTES:

1. Refer to the HP Standard Edition SRM Software QuickSpec for product and licensing details.
2. Available on some EVA orders, HP Storage Essentials Standard Edition will automatically appear on the order.
3. Standard Edition SRM LTU contains bundled licensing comprising of Enterprise Edition 150 MAPs, and 4 TBs of File System Viewer and NAS Manager, and I MAL for either the Exchange Viewer or the Database Viewer (customer choice), and can monitor up to 3 EVA with the Performance Pack software.

Optional Hardware Accessories

StorageWorks FC Drives - Upgrade installation	300 GB 10K rpm dual-port 2 Gb/s FC-AL 1-inch (2.54 cm) drive	364622-B22
	HP StorageWorks EVA 450GB 10K Fibre Channel Add-On HDD	AP729A
	HP StorageWorks EVA 600GB 10K Fibre Channel Add-On HDD	AP730A
	300 GB 15K rpm dual-port 2/4 Gb/s FC-AL 1-inch (2.54 cm) drive	AG425A
	146 GB 15K rpm dual-port 2/4 Gb/s FC-AL 1-inch (2.54 cm) drive	364621-B22
	450 GB 15K rpm dual-port 2/4 Gb/s FC-AL 1-inch (2.54 cm) drive	AG804A
	NOTE: These drives are for on-site install only. For Factory integration of drives see Step 5.	
HP StorageWorks FATA Drives - Upgrade installation	1TB FATA disk dual-port 2 Gb FC Hybrid disk drive factory integrated	AG883A
	NOTE: These drives are for on-site install only. For Factory integration of drives see Step 5.	
	NOTE: XCS V6.110 supports the 1TB FATA drive. XCS V6.110 has virtual device mapping (addressable capacity) limits of 80TB/80TB /200TB (EVA4000 & EVA4100/EVA6000 & EVA6100/EV8000 & EVA8100 respectively) . Calculation of virtual device capacity includes all created virtual disks plus the mapped capacity of all snapshot, snapclone and mirrorclones on the array. The potential to reach the limits vary with the usage of the array. When installing a significant number of the 1TB FATA drives into an array contact your sales or service representative to discuss your configuration requirements. Expansion of the virtual device mapping limits will occur in Mid 2008.	
Non-HP Rack installation	For racks other than those specifically stated within the EVA4100/6100/8100 product set, please visit the EVA web page for details on rack and power specifications: http://www.hp.com/go/eva	

SAN Components

The HP StorageWorks SAN integrates best-in-class storage networking components to deliver a complete connectivity platform for end-to-end network storage solutions. HP's fabric portfolio includes: HBA's, directors, switches, SAN extenders, NAS heads, iSCSI routers, and fabric software. HP SAN Infrastructure components deliver the network storage infrastructure for the Adaptive Enterprise. For details on SAN infrastructure components and storage compatibility information, please visit: http://hp.com/go/san.

Technical Specifications

	EVA Starter Kits, EVA4100	EVA6100	EVA8100
Controller Model	HSV200-B	HSV200-B	HSV210-B
Controller Cache	4 GB per controller pair standard	4 GB per controller pair standard	8 GB per controller pair standard
Battery Backup for Cache	Yes, up to 96 hours	Yes, up to 96 hours	Yes, up to 96 hours
Virtual Controller Software (VCS)	HP StorageWorks EVA4x00/6x00/8x00 XCS v6.110	HP StorageWorks EVA4x00/6x00/8x00 XCS v6.110	HP StorageWorks EVA4x00/6x00/8x00 XCS v6.110
Host Interface	Fibre Channel Switched Fabric	Fibre Channel Switched Fabric	Fibre Channel Switched Fabric
Host Ports per Controller	Dual 4Gb/s FC enabled (running at 2 or 4 Gb/s with 2 or 4 Gb/s switches and HBAs)	Dual 4Gb/s FC enabled (running at 2 or 4 Gb/s with 2 or 4 Gb/s switches and HBAs)	Four 4Gb/s FC enabled (running at 2 or 4 Gb/s with 2 or 4 Gb/s switches and HBAs)
Drive Interface	Two 2Gb/s FC-AL ports per controller in redundant pairs, two paths to each dual ported HDD	Two 2Gb/s FC-AL ports per controller in redundant pairs, two paths to each dual ported HDD	Four 2Gb/s FC-AL ports per controller in redundant pairs, two paths to each dual ported HDD
RAID Levels	Vraid0, Vraid1, Vraid 0+1, Vraid5, Vraid 0+5 & Cross Vraid Snaps	Vraid0, Vraid1, Vraid 0+1, Vraid5, Vraid 0+5 & Cross Vraid Snaps	Vraid0, Vraid1, Vraid 0+1, Vraid5, Vraid 0+5 & Cross Vraid Snaps
Maximum Disks Supported	56 per Controller Pair	112 per Controller Pair	240 per Controller Pair (168 in one cabinet, expandable to 240 with an optional expansion cabinet.)
JBOD Support (behind XP)	Yes	Yes	Yes
Fibre Channel Switches & Directors	Optical Switches and Directors: http://h18006.www1.hp.com/storage/saninfrastructure/switches.html		
O/S Support	HP-UX HP OpenVMS HP Tru64 UNIX Windows XP Professional Windows 2000 Server & Advanced Server Windows 2003 Standard/Enterprise (32/64-bit) and Extended/DataCenter (64-bit) Sun Solaris Linux IBM AIX Novell NetWare VMware Apple Mac OSX Citrix Xen Enterprise NOTE: See Operating System, Cluster and High Availability Compatibility matrix above for Operating System version detail.		
Sustained I/O and MB Throughput	Greater than 154,000 and over 1380 MB/s	Greater than 154,000 and over 1380 MB/s	Greater than 225,000 and over 2450 MB/s
Redundant Blowers	Yes	Yes	Yes
Environmental Monitoring Unit	Yes. Monitors Power and Temperature	Yes. Monitors Power and Temperature	Yes. Monitors Power and Temperature
Regulatory approvals	UL, CSA, TUV, FCC, CE MARK, CTICK, BSMI, VCCI	UL, CSA, TUV, FCC, CE MARK, CTICK, BSMI, VCCI	UL, CSA, TUV, FCC, CE MARK, CTICK, BSMI, VCCI

Technical Specifications

Management Software	Command View EVA v7.0 or v8.0 used with the Storage Management Appliance software v2.1 running on the HP OpenView Storage Management Appliance (SMA) or with a server in the SAN running Microsoft Windows.		
Disk Drives, Interface	Dual-port 2/4 Gb/s FC-AL	Dual-port 2/4 Gb/s FC-AL	Dual-port 2/4 Gb/s FC-AL
Disk Drives Enclosure	14 bay switched enclosure	14 bay switched enclosure	14 bay switched enclosure

NOTE: EVA4100 Starter Kits comes pre-configured with a 2C1D, 8-146GB 15K or 300GB 10K rpm HDDs Command View EVA software with licensing up to 4TBs. The EVA4100 Starter Kit for HP BladeSystems comes pre-configured with a 2C1D and Command View software with licensing up to 4TB's.

	EVA4100	EVA6100	EVA8100
Operating Temperature	50° to 95° F (10° to 35° C) - Reduce rating by 1° F for each 1000 ft altitude (1.8° C/1,000 m)		
Shipping Temperature	-40° to 150° F (-40° to 66° C)		
Humidity	10% to 90% non-condensing		
Shipping Humidity	5% to 90% non-condensing		
Altitude	Up to 8,000 ft (2,400 m)		
Air Quality	Not to exceed 500,000 particles per cubic foot of air at a size of 0.5 micron or larger		

Power Data (North America/Europe/Japan) **maximum configuration**

	EVA4100	EVA6100	EVA8100
AC plug type (quantity 2)	North America-3 wire NEMA No. L6-30P, 30 Amp (208 to 240V, 50-60Hz 30A) Europe - 3 wire, 2 pole IEC 309, 30 amp, (220 to 240V 50Hz 32A)		
Number of phases	Single		
Rated current	17A @ 200V-240V AC, 60Hz total, 4.25 A per power cord		
Nominal Line Voltage	North America - 208 or 230V Europe - 230V Japan - 206V		
Range Line Voltage	187 to 256V		
Line Frequency	North America 60Hz, Europe 50Hz, Japan 50 or 60 Hz		

Enterprise Virtual Array 4100 and 4100 Starter Kits

NOTE: This data represents fully populated drive shelves with 15K rpm disk drives. Other drive types may vary slightly.		208 Volts				230 Volts			
		2C1D	2C2D	2C3D	2C4D	2C1D	2C2D	2C3D	2C4D
Typical	**Total System Wattage**	638	1013	1390	1767	638	1013	1390	1767
	Total System BTU/hour	1729	3014	4300	5585	1729	3014	4300	5585
	Input Current (A) - Typical per system	1.6	2.6	3.5	4.4	1.5	2.4	3.3	4.2
	In Rush Current (A)	98	132	170	220	104	147	190	244
Failover Mode	**Input Current (A) - Maximum per system**	2.7	4.3	5.9	7.5	2.6	4.1	5.5	7.1

NOTE: Typical is described as a system in normal steady state operation. (I.e., both PDUs operating normally, the array reading/writing to disk drives in a production environment)

Enterprise Virtual Array 6100

NOTE: This data represents fully populated drive shelves with 15K rpm disk drives. Other drive types may vary slightly.		208 Volts					230 Volts				
		2C4D	2C5D	2C6D	2C7D	2C8D	2C4D	2C5D	2C6D	2C7D	2C8D
Typical*	Total System Wattage	1837	2214	2590	2967	3344	1837	2214	2590	2967	3344
	Total System BTU/hour	6268	7553	8838	10124	11409	6268	7553	8838	10124	11409
	Input Current (A) - Typical per system	4.6	5.5	6.5	7.4	8.4	4.3	5.2	6.1	7.0	7.9
	In Rush Current (A)	220	250	280	321	363	244	272	311	357	403
Failover Mode	Input Current (A) - Maximum per system	7.8	9.4	11.0	12.6	14.2	7.3	8.8	10.0	11.9	13.3
*NOTE: Typical is described as a system in normal steady state operation. (I.e., both PDUs operating normally, the array reading/writing to disk drives in a production environment)											

Enterprise Virtual Array 8100

NOTE: This data represents fully populated drive shelves with 15K rpm disk drives. Other drive types may vary slightly.		208 Volts					230 Volts				
		2C2D	2C6D	2C8D	2C10D	2C12D	2C2D	2C6D	2C8D	2C10D	2C12D
Typical*	Total System Wattage	1153	2660	3414	4167	4920	1153	2660	3414	4167	4920
	Total System BTU/hour	3936	9077	11648	14218	16789	3936	9077	11648	14218	16789
	Input Current (A) - Typical per system	2.9	6.7	8.5	10.4	12.3	2.7	6.3	8.1	9.8	11.6
	In Rush Current (A)	132	280	363	451	528	147	311	403	500	586
Failover Mode	Input Current (A) - Maximum per system	4.9	11.3	14.5	17.7	20.8	4.6	10.6	13.7	16.7	19.7
This data represents fully populated drive shelves with 15K rpm disk drives. Other drive types may vary slightly. *NOTE: Typical is described as a system in normal steady state operation. (I.e., both PDUs operating normally, the array reading/writing to disk drives in a production environment.)											

Enterprise Virtual Array EVA4100 Starter Kits, 4100/6100/8100 Product Dimensions, Weight and Clearance

Physical Dimensions	Height in/cm	Width in/cm	Depth in/cm	Max Weight lb/kg	Req. Front Clearance in/cm	Req. Rear Clearance in/cm
EVA4100/8100 2C2D (42U Graphite cab)	78.75 (200.03)	23.7 (60.3)	40.2 (102.2)	537 (244.1)	30 (76.2)	30 (76.2)
EVA6100/8100 2C6D (42U Graphite cab)	78.75 (200.03)	23.7 (60.3)	40.2 (102.2)	854 (387.37)	30 (76.2)	
EVA8100 2C12D (42U Graphite cab)	78.75 (200.03)	23.7 (60.3)	40.2 (102.2)	1290 (586.4)	30 (76.2)	30 (76.2)
EVA4100/6100/8100 Controller Assembly	7.0/17.78	17.6/44.70	27.5/69.85	120/54.55	N/A	N/A
M5314C Drive Enclosure	5.25/13.34	19.0/42.26	20/50.8	71/32.21	N/A	N/A

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For hard drives, 1 GB = 1 billion bytes. Actual formatted capacity is less.